

The Manual on Uniform Traffic Control Devices (MUTCD) is approved by the Federal Highway Administrator as the National Standard in accordance with Title 23 U.S. Code, Sections 109(d), 114(a), 217, 315, and 402(a), 23 CFR 655, and 49 CFR 1.48(b)(8), 1.48(b)(33), and 1.48(c)(2).

Addresses for Publications Referenced in the MUTCD

American Automobile Association (AAA)  
1000 AAA Drive  
Heathrow, FL 32746  
[www.aaa.com](http://www.aaa.com)  
800-222-4357

American Association of State Highway and Transportation Officials (AASHTO) 444  
North Capitol Street, NW, Suite 249  
Washington, DC 20001  
[www.transportation.org](http://www.transportation.org)  
202-624-5800

American National Standards Institute (ANSI)  
1819 L Street, NW, 6th Floor  
Washington, DC 20036  
[www.ansi.org](http://www.ansi.org)  
202-293-8020

American Railway Engineering and Maintenance-of-Way Association (AREMA) 10003  
Derekwood Lane, Suite 210  
Lanham, MD 20706  
[www.arema.org](http://www.arema.org)  
301-459-3200

Federal Highway Administration Report Center  
Facsimile number: 814-239-2156  
[report.center@fhwa.dot.gov](mailto:report.center@fhwa.dot.gov)  
Illuminating Engineering Society (IES) 120  
Wall Street, Floor 17  
New York, NY 10005  
[www.iesna.org](http://www.iesna.org)  
212-248-5000

Institute of Makers of Explosives  
1120 19th Street, NW, Suite 310  
Washington, DC 20036-3605  
[www.ime.org](http://www.ime.org)  
202-429-9280

Institute of Transportation Engineers (ITE) 1099  
14th Street, NW, Suite 300 West Washington,  
DC 20005-3438  
[www.ite.org](http://www.ite.org)  
202-289-0222

International Organization for Standardization  
1, ch. de la Voie-Creuse  
Case Postale 56  
CH-1211  
Geneva 20, Switzerland  
[www.iso.ch](http://www.iso.ch)  
011-41-22-749-0111

International Safety Equipment Association (ISEA) 1901  
North Moore Street, Suite 808  
Arlington, VA 22209  
[www.safetyequipment.org](http://www.safetyequipment.org)  
703-525-1695

National Committee on Uniform Traffic Laws and Ordinances (NCUTLO) 107  
South West Street, Suite 110  
Alexandria, VA 22314  
[www.ncutlo.org](http://www.ncutlo.org)  
800-807-5290

National Electrical Manufacturers Association (NEMA) 1300  
North 17th Street, Suite 1752  
Rosslyn, VA 22209  
[www.nema.org](http://www.nema.org)  
703-841-3200

Occupational Safety and Health Administration (OSHA) U.S.  
Department of Labor  
200 Constitution Avenue, NW  
Washington, DC 20210  
[www.osha.gov](http://www.osha.gov)  
800-321-6742

Transportation Research Board (TRB) The  
National Academies  
500 Fifth Street, NW  
Washington, DC 20001  
[www.nas.edu/trb](http://www.nas.edu/trb)  
202-334-3072

U.S. Architectural and Transportation Barriers Compliance Board (The U.S. Access Board) 1331 F  
Street, NW, Suite 1000  
Washington, DC 20004-1111  
[www.access-board.gov](http://www.access-board.gov)  
202-272-0080

### Acknowledgments

The Federal Highway Administration gratefully acknowledges the valuable assistance that it received from the National Committee on Uniform Traffic Control Devices and its more than 250 voluntary members in the development of this Manual.

# INDIANA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES TABLE OF CONTENTS

Page

**INTRODUCTION**.....I-1

## **PART 1. GENERAL**

### **CHAPTER 1A. GENERAL**

Section 1A.01	Purpose of Traffic Control Devices.....	1
Section 1A.02	Principles of Traffic Control Devices .....	1
Section 1A.03	Design of Traffic Control Devices .....	1
Section 1A.04	Placement and Operation of Traffic Control Devices .....	2
Section 1A.05	Maintenance of Traffic Control Devices.....	2
Section 1A.06	Uniformity of Traffic Control Devices.....	2
Section 1A.07	Responsibility for Traffic Control Devices .....	2
Section 1A.08	Authority for Placement of Traffic Control Devices.....	3
Section 1A.09	Engineering Study and Engineering Judgment .....	4
Section 1A.10	Interpretations, Experimentations, Changes, and Interim Approvals.....	4
Section 1A.11	Relation to Other Publications .....	7
Section 1A.12	Color Code .....	10
Section 1A.13	Definitions of Headings, Words, and Phrases in this Manual.....	10
Section 1A.14	Meanings of Acronyms and Abbreviations in this Manual.....	23
Section 1A.15	Abbreviations Used on Traffic Control Devices .....	24

## **PART 2. SIGNS**

### **CHAPTER 2A. GENERAL**

Section 2A.01	Function and Purpose of Signs.....	27
Section 2A.02	Definitions .....	27
Section 2A.03	Standardization of Application.....	27
Section 2A.04	Excessive Use of Signs.....	27
Section 2A.05	Classification of Signs.....	28
Section 2A.06	Design of Signs .....	28
Section 2A.07	Retroreflectivity and Illumination .....	29
Section 2A.08	Maintaining Minimum Retroreflectivity .....	30
Section 2A.09	Shapes.....	32
Section 2A.10	Sign Colors.....	32
Section 2A.11	Dimensions.....	32
Section 2A.12	Symbols.....	34
Section 2A.13	Word Messages .....	35
Section 2A.14	Sign Borders.....	36
Section 2A.15	Enhanced Conspicuity for Standard Signs .....	36
Section 2A.16	Standardization of Location .....	37
Section 2A.17	Overhead Sign Installations.....	41
Section 2A.18	Mounting Height .....	42
Section 2A.19	Lateral Offset.....	43
Section 2A.20	Orientation.....	43
Section 2A.21	Posts and Mountings .....	44
Section 2A.22	Maintenance .....	44
Section 2A.23	Median Opening Treatments for Divided Highways with Wide Medians.....	44

**CHAPTER 2B. REGULATORY SIGNS, BARRICADES, AND GATES**

Section 2B.01	Application of Regulatory Signs .....	45
Section 2B.02	Design of Regulatory Signs.....	45
Section 2B.03	Size of Regulatory Signs .....	45
Section 2B.04	Right-of-Way at Intersection.....	50
Section 2B.05	STOP Sign (R1-1) and ALL WAY Plaque (R1-3P) .....	51
Section 2B.06	STOP Sign Applications .....	52
Section 2B.07	Multi-Way Stop Applications .....	52
Section 2B.08	YIELD Sign (R1-2).....	53
Section 2B.09	YIELD Sign Applications .....	53
Section 2B.10	STOP Sign or YIELD Sign Placement.....	53
Section 2B.11	Yield Here To Pedestrians Signs and Stop Here For Pedestrians Signs (R1-5 Series) .....	54
Section 2B.12	In-Street and Overhead Pedestrian Crossing Signs (R1-6, R1-6a, R1-9, R1-9a).....	55
Section 2B.13	Speed Limit Sign (R2-1) .....	56
Section 2B.14	Truck Speed Limit Sign or Plaque (R2-Y2 or R2-2P).....	58
Section 2B.15	Night Speed Limit Plaque (R2-3P) .....	58
Section 2B.16	Minimum Speed Limit Plaque (R2-4P).....	59
Section 2B.17	Higher Fines Signs and Plaque (R2-6P, R2-10, and R2-11) .....	59
Section 2B.18	Movement Prohibition Signs (R3-1 through R3-4, R3-18, and R3-27) .....	60
Section 2B.19	Intersection Lane Control Signs (R3-5 through R3-8) .....	61
Section 2B.20	Mandatory Movement Lane Control Signs (R3-5, R3-5a, R3-7, and R3-20) .....	62
Section 2B.21	Optional Movement Lane Control Sign (R3-6).....	63
Section 2B.22	Advance Intersection Lane Control Signs (R3-8 Series).....	64
Section 2B.23	RIGHT (LEFT) LANE MUST EXIT Sign (R3-33).....	64
Section 2B.24	Two-Way Left Turn Only Signs (R3-9a, R3-9b) .....	64
Section 2B.25	BEGIN and END Plaques (R3-9cP, R3-9dP).....	64
Section 2B.26	Reversible Lane Control Signs (R3-9e through R3-9i).....	65
Section 2B.27	Jughandle Signs (R3-23, R3-24, R3-25, and R3-26 Series) .....	67
Section 2B.28	DO NOT PASS Sign (R4-1).....	72
Section 2B.29	PASS WITH CARE Sign (R4-2).....	73
Section 2B.30	KEEP RIGHT EXCEPT TO PASS Sign (R4-16) and SLOWER TRAFFIC KEEP RIGHT Sign (R4-3) .....	73
Section 2B.31	TRUCKS USE RIGHT LANE Sign (R4-5) AND TRUCKS AND VEHICLES WITH TRAILERS USE RIGHT LANE OR RIGHT TWO LANES SIGNS (R4-Y9 AND R4-Y10).....	73
Section 2B.32	Keep Right and Keep Left Signs (R4-7, R4-8).....	73
Section 2B.33	STAY IN LANE Sign (R4-9).....	74
Section 2B.34	RUNAWAY VEHICLES ONLY Sign (R4-10) .....	74
Section 2B.35	Slow Vehicle Turn-Out Signs (R4-12, R4-13, and R4-14) .....	74
Section 2B.36	DO NOT DRIVE ON SHOULDER Sign (R4-17) and DO NOT PASS ON SHOULDER Sign (R4-18).....	75
Section 2B.37	DO NOT ENTER Sign (R5-1) .....	75
Section 2B.38	WRONG WAY Sign (R5-1a).....	76
Section 2B.39	Selective Exclusion Signs .....	76
Section 2B.40	ONE WAY Signs (R6-1, R6-2) .....	77
Section 2B.41	Wrong-Way Traffic Control at Interchange Ramps .....	79
Section 2B.42	Divided Highway Crossing Signs (R6-3, R6-3a).....	82
Section 2B.43	Roundabout Directional Arrow Signs (R6-4, R6-4a, and R6-4b).....	84
Section 2B.44	Roundabout Circulation Plaque (R6-5P).....	84

Section 2B.45	Examples of Roundabout Signing.....	84
Section 2B.46	Parking, Standing, and Stopping Signs (R7 and R8 Series).....	88
Section 2B.47	Design of Parking, Standing, and Stopping Signs.....	89
Section 2B.48	Placement of Parking, Stopping, and Standing Signs .....	92
Section 2B.49	Emergency Restriction Signs (R8-4, R8-7, R8-8).....	92
Section 2B.50	WALK ON LEFT FACING TRAFFIC and No Hitchhiking Signs (R9-1, R9-4, R9-4a).....	92
Section 2B.51	Pedestrian Crossing Signs (R9-2, R9-3).....	92
Section 2B.52	Traffic Signal Pedestrian and Bicycle Actuation Signs (R10-1 through R10-4, and R10-24 through R10-26).....	94
Section 2B.53	Traffic Signal Signs (R10-5 through R10-30).....	95
Section 2B.54	No Turn on Red Signs (R10-11 Series, R10-17a, and R10-30) .....	95
Section 2B.55	Photo Enforced Signs and Plaques (R10-18, R10-19P, R10-19aP) .....	97
Section 2B.56	Ramp Metering Signs (R10-28 and R10-29).....	97
Section 2B.57	KEEP OFF MEDIAN Sign (R11-1).....	97
Section 2B.58	ROAD CLOSED Sign (R11-2) and LOCAL TRAFFIC ONLY Signs (R11-3 Series, R11-4).....	98
Section 2B.59	Weight Limit Signs (R12-1 through R12-5) .....	98
Section 2B.60	Weigh Station Signs (R13 Series).....	99
Section 2B.61	TRUCK ROUTE Sign (R14-1) .....	99
Section 2B.62	Hazardous Material Signs (R14-2, R14-3).....	99
Section 2B.63	National Network Signs (R14-4, R14-5).....	100
Section 2B.64	Headlight Use Signs (R16-5 through R16-11).....	100
Section 2B.65	FENDER BENDER Sign (R16-4) .....	101
Section 2B.66	Seat Belt Symbol.....	101
Section 2B.67	Barricades.....	101
Section 2B.68	Gates.....	101

## **CHAPTER 2C. WARNING SIGNS AND OBJECT MARKERS**

Section 2C.01	Function of Warning Signs.....	103
Section 2C.02	Application of Warning Signs.....	103
Section 2C.03	Design of Warning Signs .....	103
Section 2C.04	Size of Warning Signs.....	103
Section 2C.05	Placement of Warning Signs .....	108
Section 2C.06	Horizontal Alignment Warning Signs .....	109
Section 2C.07	Horizontal Alignment Signs (W1-1 through W1-5, W1-11, W1-15).....	110
Section 2C.08	Advisory Speed Plaque (W13-1P) .....	112
Section 2C.09	Chevron Alignment Sign (W1-8).....	112
Section 2C.10	Combination Horizontal Alignment/Advisory Speed Signs (W1-1a, W1-2a).....	113
Section 2C.11	Combination Horizontal Alignment/Intersection Signs (W1-10 Series) .....	113
Section 2C.12	One-Direction Large Arrow Sign (W1-6) .....	113
Section 2C.13	Truck Rollover Warning Sign (W1-13) .....	114
Section 2C.14	Advisory Exit and Ramp Speed Signs (W13-2 and W13-3).....	114
Section 2C.15	Combination Horizontal Alignment/Advisory Exit and Ramp Speed Signs (W13-6 and W13-7).....	115
Section 2C.16	Hill Signs (W7-1, W7-1a) .....	115
Section 2C.17	Truck Escape Ramp Signs (W7-4 Series) .....	115
Section 2C.18	HILL BLOCKS VIEW Sign (W7-6).....	117
Section 2C.19	ROAD NARROWS Sign (W5-1).....	117
Section 2C.20	NARROW BRIDGE Sign (W5-2) .....	118
Section 2C.21	ONE LANE BRIDGE Sign (W5-3) .....	118

Section 2C.22	Divided Highway Sign (W6-1) .....	119
Section 2C.23	Divided Highway Ends Sign (W6-2) .....	119
Section 2C.24	Freeway or Expressway Ends Signs (W19 Series).....	119
Section 2C.25	Double Arrow Sign (W12-1).....	119
Section 2C.26	DEAD END/NO OUTLET Signs (W14-1, W14-1a, W14-2, W14-2a).....	119
Section 2C.27	Low Clearance Signs (W12-2 and W12-2a) .....	120
Section 2C.28	BUMP and DIP Signs (W8-1, W8-2).....	120
Section 2C.29	SPEED HUMP Sign (W17-1) .....	120
Section 2C.30	PAVEMENT ENDS Sign (W8-3).....	122
Section 2C.31	Shoulder Signs (W8-4, W8-9, W8-17, W8-23, and W8-25).....	122
Section 2C.32	Surface Condition Signs (W8-5, W8-7, W8-8, W8-11, W8-13, and W8-14).....	122
Section 2C.33	Warning Signs and Plaques for Motorcyclists (W8-15, W8-15P, and W8-16) .....	123
Section 2C.34	NO CENTER LINE Sign (W8-12) .....	123
Section 2C.35	Weather Condition Signs (W8-18, W8-19, W8-21, and W8-22).....	123
Section 2C.36	Advance Traffic Control Signs (W3-1, W3-2, W3-3, W3-4).....	123
Section 2C.37	Advance Ramp Control Signal Signs (W3-7 and W3-8) .....	124
Section 2C.38	Reduced Speed Limit Ahead Signs (W3-5, W3-5a) .....	124
Section 2C.39	DRAW BRIDGE Sign (W3-6).....	125
Section 2C.40	Merge Signs (W4-1, W4-5).....	125
Section 2C.41	Added Lane Signs (W4-3, W4-6).....	126
Section 2C.42	Lane Ends Signs (W4-2, W9-1, W9-2) .....	126
Section 2C.43	RIGHT (LEFT) LANE EXIT ONLY AHEAD Sign (W9-7).....	126
Section 2C.44	Two-Way Traffic Sign (W6-3).....	127
Section 2C.45	NO PASSING ZONE Sign (W14-3).....	127
Section 2C.46	Intersection Warning Signs (W2-1 through W2-8).....	127
Section 2C.47	Two-Direction Large Arrow Sign (W1-7) .....	128
Section 2C.48	Traffic Signal Signs (W25-1, W25-2).....	128
Section 2C.49	Vehicular Traffic Warning Signs (W8-6, W11-1, W11-5, W11-5a, W11-8, W11-10, W11-11, W11-12P, W11-14, W11-15, and W11-15a).....	128
Section 2C.50	Non-Vehicular Warning Signs (W11-2, W11-3, W11-4, W11-6, W11-7, W11-9, and W11-16 through W11-22).....	130
Section 2C.51	Playground Sign (W15-1) .....	131
Section 2C.52	NEW TRAFFIC PATTERN AHEAD Sign (W23-2) .....	131
Section 2C.53	Use of Supplemental Warning Plaques .....	131
Section 2C.54	Design of Supplemental Warning Plaques .....	132
Section 2C.55	Distance Plaques (W16-2 Series, W16-3 Series, W16-4P, W7-3aP).....	132
Section 2C.56	Supplemental Arrow Plaques (W16-5P, W16-6P).....	132
Section 2C.57	Hill-Related Plaques (W7-2 Series, W7-3 Series).....	133
Section 2C.58	Advance Street Name Plaque (W16-8P, W16-8aP) .....	133
Section 2C.59	CROSS TRAFFIC DOES NOT STOP Plaque (W4-4P).....	133
Section 2C.60	SHARE THE ROAD Plaque (W16-1P).....	133
Section 2C.61	Photo Enforced Plaque (W16-10P) .....	134
Section 2C.62	NEW Plaque (W16-15P).....	134
Section 2C.63	Object Marker Design and Placement Height .....	134
Section 2C.64	Object Markers for Obstructions Within the Roadway .....	135
Section 2C.65	Object Markers for Obstructions Adjacent to the Roadway .....	135
Section 2C.66	Object Markers for Ends of Roadways .....	136

**CHAPTER 2D. GUIDE SIGNS CONVENTIONAL ROADS**

Section 2D.01	Scope of Conventional Road Guide Sign Standards .....	137
Section 2D.02	Application .....	137
Section 2D.03	Color, Retroreflection, and Illumination .....	137
Section 2D.04	Size of Signs .....	137
Section 2D.05	Lettering Style .....	138
Section 2D.06	Size of Lettering .....	138
Section 2D.07	Amount of Legend .....	140
Section 2D.08	Arrows .....	140
Section 2D.09	Numbered Highway Systems .....	142
Section 2D.10	Route Signs and Auxiliary Signs .....	142
Section 2D.11	Design of Route Signs .....	143
Section 2D.12	Design of Route Sign Auxiliaries .....	144
Section 2D.13	Junction Auxiliary Sign (M2-1) .....	144
Section 2D.14	Combination Junction Sign (M2-2) .....	145
Section 2D.15	Cardinal Direction Auxiliary Signs (M3-1 through M3-4) .....	145
Section 2D.16	Auxiliary Signs for Alternative Routes (M4 Series) .....	145
Section 2D.17	ALTERNATE Auxiliary Signs (M4-1, M4-1a) .....	145
Section 2D.18	BY-PASS Auxiliary Sign (M4-2) .....	146
Section 2D.19	BUSINESS Auxiliary Sign (M4-3) .....	146
Section 2D.20	TRUCK Auxiliary Sign (M4-4) .....	146
Section 2D.21	TO Auxiliary Sign (M4-5) .....	146
Section 2D.22	END Auxiliary Sign (M4-6) .....	146
Section 2D.23	BEGIN Auxiliary Sign (M4-14) .....	146
Section 2D.24	TEMPORARY Auxiliary Signs (M4-7, M4-7a) .....	147
Section 2D.25	Temporary Detour and Auxiliary Signs .....	147
Section 2D.25.1	Local Traffic and Frontage Road Signs (M4-Y15, M4-Y16) .....	147
Section 2D.26	Advance Turn Arrow Auxiliary Signs (M5-1, M5-2, and M5-3) .....	147
Section 2D.27	Lane Designation Auxiliary Signs (M5-4, M5-5, and M5-6) .....	148
Section 2D.28	Directional Arrow Auxiliary Signs (M6 Series) .....	148
Section 2D.29	Route Sign Assemblies .....	148
Section 2D.30	Junction Assembly .....	153
Section 2D.31	Advance Route Turn Assembly .....	154
Section 2D.32	Directional Assembly .....	154
Section 2D.33	Combination Lane-Use/Destination Overhead Guide Sign (D15-1) .....	155
Section 2D.34	Confirming or Reassurance Assemblies .....	156
Section 2D.35	Trailblazer Assembly .....	156
Section 2D.36	Destination and Distance Signs .....	157
Section 2D.37	Destination Signs (D1 Series) .....	157
Section 2D.38	Destination Signs at Circular Intersections .....	158
Section 2D.39	Destination Signs at Jughandles .....	159
Section 2D.40	Location of Destination Signs .....	159
Section 2D.41	Distance Signs (D2 Series) .....	162
Section 2D.42	Location of Distance Signs .....	162
Section 2D.43	Street Name Signs (D3-1 or D3-1a) .....	162
Section 2D.44	Advance Street Name Signs (D3-2) .....	164
Section 2D.45	Signing on Conventional Roads on Approaches to Interchanges .....	165
Section 2D.46	Freeway Entrance Signs (D13-3 and D13-3a) .....	171
Section 2D.47	Parking Area Guide Sign (D4-1) .....	172
Section 2D.48	PARK - RIDE Sign (D4-2) .....	172

Section 2D.49	Weigh Station Signing (D8 Series) .....	173
Section 2D.50	Community Wayfinding Signs .....	173
Section 2D.51	Truck, Passing, or Climbing Lane Signs (D17-1 and D17-2) .....	179
Section 2D.52	Slow Vehicle Turn-Out Sign (D17-7) .....	179
Section 2D.53	Signing of Named Highways .....	180
Section 2D.54	Crossover Signs (D13-1 and D13-2) .....	180
Section 2D.55	National Scenic Byways Signs (D6-4, D6-4a) .....	180

## **CHAPTER 2E. GUIDE SIGNS FREEWAYS AND EXPRESSWAYS**

Section 2E.01	Scope of Freeway and Expressway Guide Sign Standards .....	183
Section 2E.02	Freeway and Expressway Signing Principles .....	183
Section 2E.03	Guide Sign Classification .....	183
Section 2E.04	General .....	184
Section 2E.05	Color of Guide Signs .....	184
Section 2E.06	Retroreflection or Illumination .....	184
Section 2E.07	Characteristics of Urban Signing .....	184
Section 2E.08	Characteristics of Rural Signing .....	185
Section 2E.09	Signing of Named Highways .....	185
Section 2E.10	Amount of Legend on Guide Signs .....	185
Section 2E.11	Number of Signs at an Overhead Installation and Sign Spreading .....	185
Section 2E.12	Pull-Through Signs (E6-2, E6-2a) .....	186
Section 2E.13	Designation of Destinations .....	186
Section 2E.14	Size and Style of Letters and Signs .....	187
Section 2E.15	Interline and Edge Spacing .....	187
Section 2E.16	Sign Borders .....	194
Section 2E.17	Abbreviations .....	194
Section 2E.18	Symbols .....	194
Section 2E.19	Arrows for Interchange Guide Signs .....	194
Section 2E.20	Signing for Option Lanes at Splits and Multi-Lane Exits .....	195
Section 2E.21	Design of Overhead Arrow-per-Lane Guide Signs for Option Lanes .....	195
Section 2E.22	Design of Freeway and Expressway Diagrammatic Guide Signs for Option Lanes .....	200
Section 2E.23	Signing for Intermediate and Minor Interchange Multi-Lane Exits with an Option Lane ...	205
Section 2E.24	Signing for Interchange Lane Drops .....	205
Section 2E.25	Overhead Sign Installations .....	208
Section 2E.26	Lateral Offset .....	212
Section 2E.27	Route Signs and Trailblazer Assemblies .....	212
Section 2E.28	Eisenhower Interstate System Signs (M1-10, M1-10a) .....	213
Section 2E.29	Signs for Intersections at Grade .....	213
Section 2E.30	Interchange Guide Signs .....	213
Section 2E.31	Interchange Exit Numbering .....	214
Section 2E.32	Interchange Classification .....	218
Section 2E.33	Advance Guide Signs .....	218
Section 2E.34	Next Exit Plaques .....	220
Section 2E.35	Other Supplemental Guide Signs .....	220
Section 2E.36	Exit Direction Signs .....	222
Section 2E.37	Exit Gore Signs (E5-1 Series) .....	224
Section 2E.38	Post-Interchange Signs .....	224
Section 2E.39	Post-Interchange Distance Signs .....	225
Section 2E.40	Interchange Sequence Signs .....	225

Section 2E.41	Community Interchanges Identification Signs .....	227
Section 2E.42	NEXT XX EXITS Sign .....	227
Section 2E.43	Signing by Type of Interchange .....	228
Section 2E.44	Freeway-to-Freeway Interchange .....	228
Section 2E.45	Cloverleaf Interchange .....	228
Section 2E.46	Cloverleaf Interchange with Collector-Distributor Roadways .....	232
Section 2E.47	Partial Cloverleaf Interchange .....	232
Section 2E.48	Diamond Interchange .....	232
Section 2E.49	Diamond Interchange in Urban Area .....	236
Section 2E.50	Closely-Spaced Interchanges .....	236
Section 2E.51	Minor Interchange .....	236
Section 2E.52	Signing on Conventional Road Approaches and Connecting Roadways .....	237
Section 2E.53	Wrong-Way Traffic Control at Interchange Ramps .....	237
Section 2E.54	Weigh Station Signing .....	238

## **CHAPTER 2F. TOLL ROAD SIGNS**

Section 2F.01	Scope .....	239
Section 2F.02	Sizes of Toll Road Signs .....	239
Section 2F.03	Use of Purple Backgrounds and Underlay Panels with ETC Account Pictographs .....	240
Section 2F.04	Size of ETC Pictographs .....	240
Section 2F.05	Regulatory Signs for Toll Plazas .....	240
Section 2F.06	Pay Toll Advance Warning Sign (W9-6) .....	242
Section 2F.07	Pay Toll Advance Warning Plaque (W9-6P) .....	243
Section 2F.08	Stop Ahead Pay Toll Warning Sign (W9-6a) .....	244
Section 2F.09	Stop Ahead Pay Toll Warning Plaque (W9-6aP) .....	244
Section 2F.10	LAST EXIT BEFORE TOLL Warning Plaque (W16-16P) .....	244
Section 2F.11	TOLL Auxiliary Sign (M4-15) .....	244
Section 2F.12	Electronic Toll Collection (ETC) Account-Only Auxiliary Signs (M4-16 and M4-20) .....	245
Section 2F.13	Toll Facility and Toll Plaza Guide Signs - General .....	245
Section 2F.14	Advance Signs for Conventional Toll Plazas .....	250
Section 2F.15	Advance Signs for Toll Plazas on Diverging Alignments from Open-Road ETC Account-Only Lanes .....	251
Section 2F.16	Toll Plaza Canopy Signs .....	254
Section 2F.17	Guide Signs for Entrances to ETC Account-Only Facilities .....	254
Section 2F.18	ETC Program Information Signs .....	254

## **CHAPTER 2G. PREFERENTIAL AND MANAGED LANE SIGNS**

Section 2G.01	Scope .....	255
Section 2G.02	Sizes of Preferential and Managed Lane Signs .....	255
Section 2G.03	Regulatory Signs for Preferential Lanes - General .....	255
Section 2G.04	Preferential Lane Vehicle Occupancy Definition Regulatory Signs (R3-10 Series and R3-13 Series) .....	260
Section 2G.05	Preferential Lane Periods of Operation Regulatory Signs (R3-11 Series and R3-14 Series) ..	261
Section 2G.06	Preferential Lane Advance Regulatory Signs (R3-12, R3-12e, R3-12f, R3-15, R3-15a, and R3-15d) .....	265
Section 2G.07	Preferential Lane Ends Regulatory Signs (R3-12a, R3-12b, R3-12c, R3-12d, R3-12g, R3-12h, R3-15b, R3-15c, and R3-15e) .....	265
Section 2G.08	Warning Signs on Median Barriers for Preferential Lanes .....	265
Section 2G.09	High-Occupancy Vehicle (HOV) Plaque (W16-1 1P) .....	266

Section 2G.10	Preferential Lane Guide Signs - General.....	267
Section 2G.11	Guide Signs for Initial Entry Points to Preferential Lanes .....	269
Section 2G.12	Guide Signs for Intermediate Entry Points to Preferential Lanes .....	270
Section 2G.13	Guide Signs for Egress from Preferential Lanes to General-Purpose Lanes.....	272
Section 2G.14	Guide Signs for Direct Entrances to Preferential Lanes from Another Highway .....	275
Section 2G.15	Guide Signs for Direct Exits from Preferential Lanes to Another Highway .....	275
Section 2G.16	Signs for Priced Managed Lanes - General.....	278
Section 2G.17	Regulatory Signs for Priced Managed Lanes .....	281
Section 2G.18	Guide Signs for Priced Managed Lanes .....	281

## **CHAPTER 2H. GENERAL INFORMATION SIGNS**

Section 2H.01	Sizes of General Information Signs.....	294
Section 2H.02	General Information Signs (I Series).....	294
Section 2H.03	Traffic Signal Speed Sign (I1-1) .....	296
Section 2H.04	Miscellaneous Information Signs.....	296
Section 2H.05	Reference Location Signs (D10-1 through D10-3) and Intermediate Reference Location Signs (D10-1a through D10-3a).....	296
Section 2H.06	Enhanced Reference Location Signs (D10-4, D10-5).....	298
Section 2H.07	Auto Tour Route Signs.....	299
Section 2H.08	Acknowledgment Signs.....	299

## **CHAPTER 2I. GENERAL SERVICE SIGNS**

Section 2I.01	Sizes of General Service Signs.....	301
Section 2I.02	General Service Signs for Conventional Roads .....	302
Section 2I.03	General Service Signs for Freeways and Expressways.....	305
Section 2I.04	Interstate Oasis Signing.....	308
Section 2I.05	Rest Area and Other Roadside Area Signs.....	309
Section 2I.06	Brake Check Area Signs (D5-13 and D5-14).....	310
Section 2I.07	Chain-Up Area Signs (D5-15 and D5-16).....	310
Section 2I.08	Tourist Information and Welcome Center Signs.....	310
Section 2I.09	Radio Information Signing .....	312
Section 2I.10	TRAVEL INFO CALL 511 Signs (D12-5 and D12-5a).....	313
Section 2I.11	Carpool and Ridesharing Signing.....	313
Section 2I.12	Travel Time Signs. ....	314

## **CHAPTER 2J. SPECIFIC SERVICE SIGNS**

Section 2J.01	Eligibility.....	315
Section 2J.02	Application .....	316
Section 2J.03	Logos and Logo Sign Panels .....	316
Section 2J.04	Number and Size of Signs and Logo Sign Panels .....	320
Section 2J.05	Size of Lettering .....	320
Section 2J.06	Signs at Interchanges.....	320
Section 2J.07	Single-Exit Interchanges .....	320
Section 2J.08	Double-Exit Interchanges.....	321
Section 2J.09	Specific Service Trailblazer Signs .....	321
Section 2J.10	Signs at Intersections.....	322
Section 2J.11	Signing Policy .....	322

**CHAPTER 2K. TOURIST-ORIENTED DIRECTIONAL SIGNS**

Section 2K.01	Purpose and Application .....	324
Section 2K.02	Design.....	324
Section 2K.03	Style and Size of Lettering .....	325
Section 2K.04	Arrangement and Size of Signs .....	325
Section 2K.05	Advance Signs.....	327
Section 2K.06	Sign Locations.....	327
Section 2K.07	State Policy.....	328

**CHAPTER 2L. CHANGEABLE MESSAGE SIGNS**

Section 2L.01	Description of Changeable Message Signs .....	329
Section 2L.02	Applications of Changeable Message Signs.....	329
Section 2L.03	Legibility and Visibility of Changeable Message Signs .....	330
Section 2L.04	Design Characteristics of Changeable Message Signs.....	330
Section 2L.05	Message Length and Units of Information.....	332
Section 2L.06	Installation of Permanent Changeable Message Signs.....	333

**CHAPTER 2M. RECREATIONAL AND CULTURAL INTEREST AREA SIGNS**

Section 2M.01	Scope .....	334
Section 2M.02	Application of Recreational and Cultural Interest Area Signs .....	334
Section 2M.03	Regulatory and Warning Signs.....	334
Section 2M.04	General Design Requirements for Recreational and Cultural Interest Area Symbol Guide Signs .....	334
Section 2M.05	Symbol Sign Sizes.....	336
Section 2M.06	Use of Educational Plaques.....	336
Section 2M.07	Use of Prohibitive Circle and Diagonal Slash for Non-Road Applications .....	336
Section 2M.08	Placement of Recreational and Cultural Interest Area Symbol Signs .....	336
Section 2M.09	Destination Guide Signs.....	337
Section 2M.10	Memorial or Dedication Signing.....	343

**CHAPTER 2N. EMERGENCY MANAGEMENT SIGNING**

Section 2N.01	Emergency Management.....	346
Section 2N.02	Design of Emergency Management Signs .....	346
Section 2N.03	Evacuation Route Signs (EM-1 and EM-1a).....	346
Section 2N.04	AREA CLOSED Sign (EM-2) .....	348
Section 2N.05	TRAFFIC CONTROL POINT Sign (EM-3).....	348
Section 2N.06	MAINTAIN TOP SAFE SPEED Sign (EM-4).....	348
Section 2N.07	ROAD (AREA) USE PERMIT REQUIRED FOR THRU TRAFFIC Sign (EM-5).....	349
Section 2N.08	Emergency Aid Center Signs (EM-6 Series).....	349
Section 2N.09	Shelter Directional Signs (EM-7 Series) .....	350

## **PART 3. MARKINGS**

### **CHAPTER 3A. GENERAL**

Section 3A.01	Functions and Limitations .....	351
Section 3A.02	Standardization of Application.....	351
Section 3A.03	Maintaining Minimum Pavement Marking Retroreflectivity .....	351
Section 3A.04	Materials.....	351
Section 3A.05	Colors .....	352
Section 3A.06	Functions, Widths, and Patterns of Longitudinal Pavement Markings .....	352

### **CHAPTER 3B. PAVEMENT AND CURB MARKINGS**

Section 3B.01	Yellow Center Line Pavement Markings and Warrants .....	353
Section 3B.02	No-Passing Zone Pavement Markings and Warrants .....	356
Section 3B.03	Other Yellow Longitudinal Pavement Markings.....	358
Section 3B.04	White Lane Line Pavement Markings and Warrants.....	360
Section 3B.05	Other White Longitudinal Pavement Markings.....	374
Section 3B.06	Edge Line Pavement Markings .....	375
Section 3B.07	Warrants for Use of Edge Lines .....	375
Section 3B.08	Extensions Through Intersections or Interchanges.....	375
Section 3B.09	Lane-Reduction Transition Markings.....	378
Section 3B.10	Approach Markings for Obstructions .....	380
Section 3B.11	Raised Pavement Markers - General .....	380
Section 3B.12	Raised Pavement Markers as Vehicle Positioning Guides with Other Longitudinal Markings.....	383
Section 3B.13	Raised Pavement Markers Supplementing Other Markings.....	383
Section 3B.14	Raised Pavement Markers Substituting for Pavement Markings .....	384
Section 3B.15	Transverse Markings .....	385
Section 3B.16	Stop and Yield Lines .....	385
Section 3B.17	Do Not Block Intersection Markings.....	386
Section 3B.18	Crosswalk Markings.....	387
Section 3B.19	Parking Space Markings.....	389
Section 3B.20	Pavement Word, Symbol, and Arrow Markings .....	391
Section 3B.21	Speed Measurement Markings .....	397
Section 3B.22	Speed Reduction Markings.....	397
Section 3B.23	Curb Markings.....	398
Section 3B.24	Chevron and Diagonal Crosshatch Markings .....	399
Section 3B.25	Speed Hump Markings .....	399
Section 3B.26	Advance Speed Hump Markings.....	399

### **CHAPTER 3C. ROUNDABOUT MARKINGS**

Section 3C .01	General .....	403
Section 3C.02	White Lane Line Pavement Markings for Roundabouts .....	417
Section 3C.03	Edge Line Pavement Markings for Roundabout Circulatory Roadways.....	417
Section 3C.04	Yield Lines for Roundabouts.....	417
Section 3C.05	Crosswalk Markings at Roundabouts .....	417
Section 3C.06	Word, Symbol, and Arrow Pavement Markings for Roundabouts.....	417
Section 3C 07	Markings for Other Circular Intersections.....	418

**CHAPTER 3D MARKINGS FOR PREFERENTIAL LANES**

Section 3D.01	Preferential Lane Word and Symbol Markings .....	419
Section 3D.02	Preferential Lane Longitudinal Markings for Motor Vehicles .....	420

**CHAPTER 3E. MARKINGS FOR TOLL PLAZAS**

Section 3E.01	Markings for Toll Plazas .....	427
---------------	--------------------------------	-----

**CHAPTER 3F DELINEATORS**

Section 3F.01	Delineators.....	428
Section 3F.02	Delineator Design.....	428
Section 3F.03	Delineator Application .....	428
Section 3F.04	Delineator Placement and Spacing.....	430

**CHAPTER 3G COLORED PAVEMENTS**

Section 3G.01	General .....	432
---------------	---------------	-----

**CHAPTER 3H CHANNELIZING DEVICES USED FOR EMPHASIS OF PAVEMENT MARKING PATTERNS**

Section 3H.01	Channelizing Devices.....	433
---------------	---------------------------	-----

**CHAPTER 3I ISLANDS**

Section 3I.01	General .....	434
Section 3I.02	Approach-End Treatment .....	434
Section 3I.03	Island Marking Application.....	434
Section 3I.04	Island Marking Colors.....	434
Section 3I.05	Island Delineation.....	435
Section 3I.06	Pedestrian Islands and Medians.....	435

**CHAPTER 3J RUMBLE STRIP MARKINGS**

Section 3J.01	Longitudinal Rumble Strip Markings.....	436
Section 3J.02	Transverse Rumble Strip Markings.....	436

## **PART 4 HIGHWAY TRAFFIC SIGNALS**

### **CHAPTER 4A GENERAL**

Section 4A.01	Types .....	437
Section 4A.02	Definitions Relating to Highway Traffic Signals .....	437

### **CHAPTER 4B TRAFFIC CONTROL SIGNALS GENERAL**

Section 4B.01	General .....	438
Section 4B.02	Basis of Installation or Removal of Traffic Control Signals .....	438
Section 4B.03	Advantages and Disadvantages of Traffic Control Signals .....	438
Section 4B.04	Alternatives to Traffic Control Signals .....	439
Section 4B.05	Adequate Roadway Capacity .....	439

### **CHAPTER 4C TRAFFIC CONTROL SIGNAL NEEDS STUDIES**

Section 4C.01	Studies and Factors for Justifying Traffic Control Signals .....	440
Section 4C.02	Warrant 1, Eight-Hour Vehicular Volume .....	441
Section 4C.03	Warrant 2, Four-Hour Vehicular Volume .....	444
Section 4C.04	Warrant 3, Peak Hour .....	444
Section 4C.05	Warrant 4, Pedestrian Volume .....	449
Section 4C.06	Warrant 5, School Crossing .....	449
Section 4C.07	Warrant 6, Coordinated Signal System .....	452
Section 4C.08	Warrant 7, Crash Experience .....	452
Section 4C.09	Warrant 8, Roadway Network .....	453
Section 4C.10	Warrant 9, Intersection Near a Grade Crossing .....	453

### **CHAPTER 4D TRAFFIC CONTROL SIGNAL FEATURES**

Section 4D.01	General .....	459
Section 4D.02	Responsibility for Operation and Maintenance .....	459
Section 4D.03	Provisions for Pedestrians .....	460
Section 4D.04	Meaning of Vehicular Signal Indications .....	460
Section 4D.05	Application of Steady Signal Indications .....	463
Section 4D.06	Signal Indications – Design, Illumination, Color, and Shape .....	466
Section 4D.07	Size of Vehicular Signal Indications .....	466
Section 4D.08	Positions of Signal Indications Within a Signal Face – General .....	467
Section 4D.09	Positions of Signal Indications Within a Vertical Signal Face .....	467
Section 4D.10	Positions of Signal Indications Within a Horizontal Signal Face .....	469
Section 4D.11	Number of Signal Faces on an Approach .....	469
Section 4D.12	Visibility, Aiming, and Shielding of Signal Faces .....	471
Section 4D.13	Lateral Positioning of Signal Faces .....	473
Section 4D.14	Longitudinal Positioning of Signal Faces .....	474
Section 4D.15	Mounting Height of Signal Faces .....	475
Section 4D.16	Lateral Offset (Clearance) of Signal Faces .....	475
Section 4D.17	Signal Indications for Left-Turn Movements - General .....	475
Section 4D.18	Signal Indications for Permissive Only Mode Left-Turn Movements .....	477
Section 4D.19	Signal Indications for Protected Only Mode Left-Turn Movements .....	479
Section 4D.20	Signal Indications for Protected/Permissive Mode Left-Turn Movements .....	481
Section 4D.21	Signal Indications for Right-Turn Movements - General .....	484

Section 4D.22	Signal Indications for Permissive Only Mode Right-Turn Movements .....	485
Section 4D.23	Signal Indications for Protected Only Mode Right-Turn Movements .....	488
Section 4D.24	Signal Indications for Protected/Permissive Mode Right-Turn Movements.....	490
Section 4D.25	Signal Indications for Approaches With Shared Left-Turn/Right-Turn Lanes and No Through Movement .....	494
Section 4D.26	Yellow Change and Red Clearance Intervals .....	495
Section 4D.27	Preemption and Priority Control of Traffic Control Signals .....	499
Section 4D.28	Flashing Operation of Traffic Control Signals - General.....	501
Section 4D.29	Flashing Operation - Transition Into Flashing Mode .....	501
Section 4D.30	Flashing Operation - Signal Indications During Flashing Mode.....	501
Section 4D.31	Flashing Operation - Transition Out of Flashing Mode .....	502
Section 4D.32	Temporary and Portable Traffic Control Signals. ....	502
Section 4D.33	Lateral Offset of Signal Supports and Cabinets .....	503
Section 4D.34	Use of Signs at Signalized Locations .....	503
Section 4D.35	Use of Pavement Markings at Signalized Locations .....	504

#### **CHAPTER 4E PEDESTRIAN CONTROL FEATURES**

Section 4E.01	Pedestrian Signal Heads .....	505
Section 4E.02	Meaning of Pedestrian Signal Head Indications.....	505
Section 4E.03	Application of Pedestrian Signal Heads .....	505
Section 4E.04	Size, Design, and Illumination of Pedestrian Signal Head Indications .....	506
Section 4E.05	Location and Height of Pedestrian Signal Heads .....	507
Section 4E.06	Pedestrian Intervals and Signal Phases.....	507
Section 4E.07	Countdown Pedestrian Signals .....	509
Section 4E.08	Pedestrian Detectors .....	510
Section 4E.09	Accessible Pedestrian Signals and Detectors – General.....	514
Section 4E.10	Accessible Pedestrian Signals and Detectors – Location .....	515
Section 4E.11	Accessible Pedestrian Signals and Detectors – Walk Indications.....	515
Section 4E.12	Accessible Pedestrian Signals and Detectors – Tactile Arrows and Locator Tones .....	517
Section 4E.13	Accessible Pedestrian Signals and Detectors – Extended Pushbutton Press Features .....	517

#### **CHAPTER 4F PEDESTRIAN HYBRID BEACONS**

Section 4F.01	Application of Pedestrian Hybrid Beacons .....	519
Section 4F.02	Design of Pedestrian Hybrid Beacons .....	519
Section 4F.03	Operation of Pedestrian Hybrid Beacons .....	521

#### **CHAPTER 4G TRAFFIC CONTROL SIGNALS AND HYBRID BEACONS FOR EMERGENCY-VEHICLE ACCESS**

Section 4G.01	Application of Emergency-Vehicle Traffic Control Signals and Hybrid Beacons .....	523
Section 4G.02	Design of Emergency-Vehicle Traffic Control Signals.....	523
Section 4G.03	Operation of Emergency-Vehicle Traffic Control Signals.....	523
Section 4G.04	Emergency-Vehicle Hybrid Beacons .....	524

#### **CHAPTER 4H TRAFFIC CONTROL SIGNALS FOR ONE-LANE, TWO-WAY FACILITIES**

Section 4H.01	Application of Traffic Control Signals for One-Lane, Two-Way Facilities .....	526
Section 4H.02	Design of Traffic Control Signals for One-Lane, Two-Way Facilities .....	526
Section 4H.03	Operation of Traffic Control Signals for One-Lane, Two-Way Facilities .....	526

**CHAPTER 4I TRAFFIC CONTROL SIGNALS FOR FREEWAY ENTRANCE RAMP**

Section 4I.01	Application of Freeway Entrance Ramp Control Signals .....	527
Section 4I.02	Design of Freeway Entrance Ramp Control Signals .....	527
Section 4I.03	Operation of Freeway Entrance Ramp Control Signals .....	528

**CHAPTER 4J TRAFFIC CONTROL FOR MOVABLE BRIDGES**

Section 4J.01	Application of Traffic Control for Movable Bridges .....	529
Section 4J.02	Design and Location of Movable Bridge Signals and Gates .....	529
Section 4J.03	Operation of Movable Bridge Signals and Gates .....	531

**CHAPTER 4K HIGHWAY TRAFFIC SIGNALS AT TOLL PLAZAS**

Section 4K.01	Traffic Signals at Toll Plazas .....	532
Section 4K.02	Lane-Use Control Signals at or Near Toll Plazas .....	532
Section 4K.03	Warning Beacons at Toll Plazas .....	532

**CHAPTER 4L FLASHING BEACONS**

Section 4L.01	General Design and Operation of Flashing Beacons .....	533
Section 4L.02	Intersection Control Beacon .....	533
Section 4L.03	Warning Beacon .....	533
Section 4L.04	Speed Limit Sign Beacon .....	534
Section 4L.05	Stop Beacon .....	534

**CHAPTER 4M LANE-USE CONTROL SIGNALS**

Section 4M.01	Application of Lane-Use Control Signals. ....	535
Section 4M.02	Meaning of Lane-Use Control Signal Indications .....	535
Section 4M.03	Design of Lane-Use Control Signals .....	536
Section 4M.04	Operation of Lane-Use Control Signals .....	537

**CHAPTER 4N IN-ROADWAY LIGHTS**

Section 4N.01	Application of In-Roadway Lights .....	538
Section 4N.02	In-Roadway Warning Lights at Crosswalks .....	538

**PART 5 TRAFFIC CONTROL DEVICES FOR LOW-VOLUME ROADS****CHAPTER 5A GENERAL**

Section 5A.01	Function .....	541
Section 5A.02	Application .....	541
Section 5A.03	Design .....	541
Section 5A.04	Placement .....	543

**CHAPTER 5B REGULATORY SIGNS**

Section 5B.01	Introduction .....	544
Section 5B.02	STOP and YIELD Signs (R1-1 and R1-2) .....	544
Section 5B.03	Speed Limit Signs (R2 Series) .....	544
Section 5B.04	Traffic Movement and Prohibition Signs (R3, R4, R5, R6, R9, R10, R11, R12, R13, and R14 Series)...	545

Section 5B.05	Parking Signs (R8 Series).....	545
Section 5B.06	Other Regulatory Signs .....	545

### **CHAPTER 5C    WARNING SIGNS**

Section 5C.01	Introduction .....	546
Section 5C.02	Horizontal Alignment Signs (W1-1 through W1-8).....	546
Section 5C.03	Intersection Warning Signs (W2-1 through W2-6) .....	547
Section 5C.04	Stop Ahead and Yield Ahead Signs (W3-1, W3-2).....	547
Section 5C.05	NARROW BRIDGE Sign (W5-2) .....	547
Section 5C.06	ONE LANE BRIDGE Sign (W5-3) .....	547
Section 5C.07	Hill Sign (W7-1).....	547
Section 5C.08	PAVEMENT ENDS Sign (W8-3).....	547
Section 5C.09	Vehicular Traffic Warning and Non-Vehicular Warning Signs (W1-1 Series and W8-6) .....	547
Section 5C.10	Advisory Speed Plaque (W13-1P).....	549
Section 5C.11	DEAD END or NO OUTLET Signs (W14-1, W14-1a, W14-2, W14-2a).....	549
Section 5C.12	NO TRAFFIC SIGNS Sign (W18-1) .....	549
Section 5C.13	Other Warning Signs .....	549
Section 5C.14	Object Markers and Barricades .....	549

### **CHAPTER 5D    GUIDE SIGNS**

Section 5D.01	Introduction .....	550
---------------	--------------------	-----

### **CHAPTER 5E    MARKINGS**

Section 5E.01	Introduction .....	551
Section 5E.02	Center Line Markings.....	551
Section 5E.03	Edge Line Markings .....	551
Section 5E.04	Delineators.....	551
Section 5E.05	Other Markings.....	551

### **CHAPTER 5F    TRAFFIC CONTROL FOR HIGHWAY-RAIL GRADE CROSSINGS**

Section 5F.01	Introduction .....	552
Section 5F.02	Grade Crossing (Crossbuck) Sign and Number of Tracks Plaque (R15-1, R15-2P).....	552
Section 5F.03	Grade Crossing Advance Warning Signs (W10 Series).....	552
Section 5F.04	STOP and YIELD Signs (R1-1, R1-2) .....	553
Section 5F.05	Pavement Markings .....	553
Section 5F.06	Other Traffic Control Devices.....	553

### **CHAPTER 5G    TEMPORARY TRAFFIC CONTROL ZONES**

Section 5G.01	Introduction .....	554
Section 5G.02	Applications.....	554
Section 5G.03	Channelization Devices .....	554
Section 5G.04	Markings.....	555
Section 5G.05	Other Traffic Control Devices.....	555

### **CHAPTER 5H    TRAFFIC CONTROL FOR SCHOOL AREAS**

Section 5H.01	Introduction .....	556
---------------	--------------------	-----

**PART 6 TEMPORARY TRAFFIC CONTROL****CHAPTER 6A GENERAL**

Section 6A.01	General .....	557
---------------	---------------	-----

**CHAPTER 6B FUNDAMENTAL PRINCIPLES**

Section 6B.01	Fundamental Principles of Temporary Traffic Control .....	559
---------------	---	-----

**CHAPTER 6C TEMPORARY TRAFFIC CONTROL ELEMENTS**

Section 6C.01	Temporary Traffic Control Plans .....	561
Section 6C.02	Temporary Traffic Control Zones .....	562
Section 6C.03	Components of Temporary Traffic Control Zones .....	562
Section 6C.04	Advance Warning Area .....	562
Section 6C.05	Transition Area .....	564
Section 6C.06	Activity Area .....	564
Section 6C.07	Termination Area .....	565
Section 6C.08	Tapers .....	565
Section 6C.09	Detours and Diversions .....	568
Section 6C.10	One-Lane, Two-Way Traffic Control .....	568
Section 6C.11	Flagger Method of One-Lane, Two-Way Traffic Control .....	568
Section 6C.12	Flag Transfer Method of One-Lane, Two-Way Traffic Control .....	568
Section 6C.13	Pilot Car Method of One-Lane, Two-Way Traffic Control .....	570
Section 6C.14	Temporary Traffic Control Signal Method of One-Lane, Two-Way Traffic Control .....	570
Section 6C.15	Stop or Yield Control Method of One-Lane, Two-Way Traffic Control .....	570

**CHAPTER 6D PEDESTRIAN AND WORKER SAFETY**

Section 6D.01	Pedestrian Considerations .....	571
Section 6D.02	Accessibility Considerations .....	573
Section 6D.03	Worker Safety Considerations .....	574

**CHAPTER 6E FLAGGER CONTROL**

Section 6E.01	Qualifications for Flaggers .....	576
Section 6E.02	High-Visibility Safety Apparel .....	576
Section 6E.03	Hand-Signaling Devices .....	576
Section 6E.04	Automated Flagger Assistance Devices .....	577
Section 6E.05	STOP/SLOW Automated Flagger Assistance Devices .....	579
Section 6E.06	Red/Yellow Lens Automated Flagger Assistance Devices .....	581
Section 6E.07	Flagger Procedures .....	583
Section 6E.08	Flagger Stations .....	585

**CHAPTER 6F TEMPORARY TRAFFIC CONTROL ZONE DEVICES**

Section 6F.01	Types of Devices .....	586
Section 6F.02	General Characteristics of Signs .....	586
Section 6F.03	Sign Placement .....	587
Section 6F.04	Sign Maintenance .....	593
Section 6F.05	Regulatory Sign Authority .....	593

Section 6F.06	Regulatory Sign Design.....	593
Section 6F.07	Regulatory Sign Applications.....	593
Section 6F.08	ROAD (STREET) CLOSED Sign (R11-2) .....	593
Section 6F.09	Local Traffic Only Signs (R11-3a, R11-4).....	595
Section 6F.10	Weight Limit Signs (R12-1, R12-2, R12-5) .....	595
Section 6F.11	STAY IN LANE Sign (R4-9).....	596
Section 6F.12	Work Zone and Higher Fines Signs and Plaques .....	596
Section 6F.13	PEDESTRIAN CROSSWALK Sign (R9-8) .....	596
Section 6F.14	SIDEWALK CLOSED Signs (R9-9, R9-10, R9-11, R9-11a).....	596
Section 6F.15	Special Regulatory Signs .....	597
Section 6F.16	Warning Sign Function, Design, and Application.....	597
Section 6F.17	Position of Advance Warning Signs.....	597
Section 6F.18	ROAD (STREET) WORK Sign (W20-1) .....	601
Section 6F.19	DETOUR Sign (W20-2) .....	601
Section 6F.20	ROAD (STREET) CLOSED Sign (W20-3).....	601
Section 6F.21	ONE LANE ROAD Sign (W20-4).....	601
Section 6F.22	Lane(s) Closed Signs (W20-5, W20-5a) .....	601
Section 6F.23	CENTER LANE CLOSED AHEAD Sign (W9-3) .....	602
Section 6F.24	Lane Ends Sign (W4-2).....	602
Section 6F.25	ON RAMP Plaque (W13-4P) .....	602
Section 6F.26	RAMP NARROWS Sign (W5-4).....	602
Section 6F.27	SLOW TRAFFIC AHEAD Sign (W23-1) .....	602
Section 6F.28	EXIT OPEN and EXIT CLOSED Signs (E5-2, E5-2a) .....	602
Section 6F.29	EXIT ONLY Sign (E5-3) .....	603
Section 6F.30	NEW TRAFFIC PATTERN AHEAD Sign (W23-2).....	603
Section 6F.31	Flagger Signs (W20-7, W20-7a) .....	603
Section 6F.32	Two-Way Traffic Sign (W6-3).....	603
Section 6F.33	Workers Signs (W21-1, W21-1a).....	603
Section 6F.34	FRESH OIL (TAR) Sign (W21-2) .....	603
Section 6F.35	ROAD MACHINERY AHEAD Sign (W21-3).....	603
Section 6F.36	Motorized Traffic Signs (W8-6, W11-10).....	604
Section 6F.37	Shoulder Work Signs (W21-5, W21-5a, W21-5b) .....	604
Section 6F.38	SURVEY CREW Sign (W21-6) .....	604
Section 6F.39	UTILITY WORK Sign (W21-7) .....	604
Section 6F.40	Signs for Blasting Areas.....	604
Section 6F.41	BLASTING ZONE AHEAD Sign (W22-1).....	605
Section 6F.42	TURN OFF 2-WAY RADIO AND CELL PHONE Sign (W22-2) .....	605
Section 6F.43	END BLASTING ZONE Sign (W22-3) .....	605
Section 6F.44	Shoulder Signs and Plaque (W8-4, W8-9, W8-17, and W8-17P) .....	605
Section 6F.45	UNEVEN LANES Sign (W8-11).....	605
Section 6F.46	STEEL PLATE AHEAD Sign (W8-24).....	605
Section 6F.47	NO CENTER LINE Sign (W8-12).....	605
Section 6F.48	Reverse Curve Signs (W1-4 Series) .....	606
Section 6F.49	Double Reverse Curve Signs (W24-1 Series) .....	606
Section 6F.50	Other Warning Signs .....	606
Section 6F.51	Special Warning Signs .....	606
Section 6F.52	Advisory Speed Plaque (W13-1P).....	606
Section 6F.53	Supplementary Distance Plaque (W7-3aP) .....	607

Section 6F.54	Motorcycle Plaque (W8-15P).....	607
Section 6F.55	Guide Signs .....	607
Section 6F.56	ROAD WORK NEXT XX MILES Sign (G20-1) .....	607
Section 6F.57	END ROAD WORK Sign (G20-2) .....	608
Section 6F.58	PILOT CAR FOLLOW ME Sign (G20-4).....	608
Section 6F.59	Detour Signs (M4-8, M4-8a, M4-8b, M4-9, M4-9a, M4-9b, M4-9c, and M4-10).....	608
Section 6F.60	Portable Changeable Message Signs .....	608
Section 6F.61	Arrow Boards .....	611
Section 6F.62	High-Level Warning Devices (Flag Trees).....	613
Section 6F.63	Channelizing Devices.....	614
Section 6F.64	Cones .....	616
Section 6F.65	Tubular Markers .....	616
Section 6F.66	Vertical Panels.....	617
Section 6F.67	Drums .....	617
Section 6F.68	Type 1, 2, or 3 Barricades .....	617
Section 6F.69	Direction Indicator Barricades .....	619
Section 6F.70	Temporary Traffic Barriers as Channelizing Devices .....	619
Section 6F.71	Longitudinal Channelizing Devices .....	619
Section 6F.72	Temporary Lane Separators .....	620
Section 6F.73	Other Channelizing Devices.....	620
Section 6F.74	Detectable Edging for Pedestrians.....	620
Section 6F.75	Temporary Raised Islands .....	621
Section 6F.76	Opposing Traffic Lane Divider and Sign (W6-4) .....	621
Section 6F.77	Pavement Markings .....	622
Section 6F.78	Temporary Markings .....	622
Section 6F.79	Temporary Raised Pavement Markers .....	623
Section 6F.80	Delineators.....	623
Section 6F.81	Lighting Devices .....	624
Section 6F.82	Floodlights.....	624
Section 6F.83	Warning Lights.....	624
Section 6F.84	Temporary Traffic Control Signals .....	625
Section 6F.85	Temporary Traffic Barriers .....	626
Section 6F.86	Crash Cushions.....	627
Section 6F.87	Rumble Strips .....	628
Section 6F.88	Screens.....	628

## **CHAPTER 6G TYPE OF TEMPORARY TRAFFIC CONTROL ZONE ACTIVITIES**

Section 6G.01	Typical Applications .....	629
Section 6G.02	Work Duration.....	629
Section 6G.03	Location of Work .....	631
Section 6G.04	Modifications To Fulfill Special Needs.....	631
Section 6G.05	Work Affecting Pedestrian and Bicycle Facilities .....	632
Section 6G.06	Work Outside of the Shoulder.....	632
Section 6G.07	Work on the Shoulder with No Encroachment.....	633
Section 6G.08	Work on the Shoulder with Minor Encroachment.....	634
Section 6G.09	Work Within the Median.....	634
Section 6G.10	Work Within the Traveled Way of a Two-Lane Highway .....	634

Section 6G.11	Work Within the Traveled Way of an Urban Street .....	635
Section 6G.12	Work Within the Traveled Way of a Multi-Lane, Non-Access Controlled Highway .....	635
Section 6G.13	Work Within the Traveled Way at an Intersection .....	636
Section 6G.14	Work Within the Traveled Way of a Freeway or Expressway .....	637
Section 6G.15	Two-Lane, Two-Way Traffic on One Roadway of a Normally Divided Highway .....	638
Section 6G.16	Crossovers .....	638
Section 6G.17	Interchanges .....	638
Section 6G.18	Work in the Vicinity of a Grade Crossing .....	639
Section 6G.19	Temporary Traffic Control During Nighttime Hours .....	639

## **CHAPTER 6H TYPICAL APPLICATIONS**

Section 6H.01	Typical Applications .....	641
---------------	----------------------------	-----

## **CHAPTER 6I CONTROL OF TRAFFIC THROUGH TRAFFIC INCIDENT MANAGEMENT AREAS**

Section 6I.01	General .....	748
Section 6I.02	Major Traffic Incidents .....	749
Section 6I.03	Intermediate Traffic Incidents .....	750
Section 6I.04	Minor Traffic Incidents .....	750
Section 6I.05	Use of Emergency-Vehicle Lighting .....	751

## **PART 7 TRAFFIC CONTROL FOR SCHOOL AREAS**

### **CHAPTER 7A GENERAL**

Section 7A.01	Need for Standards .....	753
Section 7A.02	School Routes and Established School Crossings .....	753
Section 7A.03	School Crossing Control Criteria .....	753
Section 7A.04	Scope .....	754

### **CHAPTER 7B SIGNS**

Section 7B.01	Size of School Signs .....	755
Section 7B.02	Illumination and Reflectorization .....	756
Section 7B.03	Position of Signs .....	756
Section 7B.04	Height of Signs .....	756
Section 7B.05	Installation of Signs .....	756
Section 7B.06	Lettering .....	756
Section 7B.07	Sign Color for School Warning Signs .....	756
Section 7B.08	School Sign (S1-1) and Plaques .....	756
Section 7B.09	School Zone Sign (S1-1) and Plaques (S4-3P, S4-7P) and END SCHOOL ZONE Sign (S5-2) .....	758
Section 7B.10	Higher Fines Zone Signs (R2-10, R2-11) and Plaques .....	758
Section 7B.11	School Advance Crossing Assembly .....	758
Section 7B.12	School Crossing Assembly .....	763
Section 7B.13	School Bus Stop Ahead Sign (S3-1) .....	764
Section 7B.14	SCHOOL BUS TURN AHEAD Sign (S3-2) .....	764
Section 7B.15	School Speed Limit Assembly (S4-1P, S4-2P, S4-3P, S4-4P, S4-6P, S5-1) and END SCHOOL SPEED LIMIT Sign (S5-3) .....	764

Section 7B.16	Reduced School Speed Limit Ahead Sign (S4-5, S4-5a) .....	765
Section 7B.17	Parking and Stopping Signs (R7 and R8 Series) .....	766

## **CHAPTER 7C MARKINGS**

Section 7C.01	Functions and Limitations .....	767
Section 7C.02	Crosswalk Markings .....	767
Section 7C.03	Pavement Word, Symbol, and Arrow Markings .....	767

## **CHAPTER 7D CROSSING SUPERVISION**

Section 7D.01	Types of Crossing Supervision .....	768
Section 7D.02	Adult Crossing Guards .....	768
Section 7D.03	Qualifications of Adult Crossing Guards .....	768
Section 7D.04	Uniform of Adult Crossing Guards .....	768
Section 7D.05	Operating Procedures for Adult Crossing Guards .....	768
Section 7D.06	Student Patrols .....	769
Section 7D.07	Choice of Student Patrols .....	769
Section 7D.08	Operating Procedures for Student Patrols .....	769

## **PART 8 TRAFFIC CONTROL FOR RAILROAD AND LIGHT RAIL TRANSIT GRADE CROSSINGS**

### **CHAPTER 8A GENERAL**

Section 8A.01	Introduction .....	771
Section 8A.02	Use of Standard Devices, Systems, and Practices at Highway-Rail Grade Crossings .....	772
Section 8A.03	Use of Standard Devices, Systems, and Practices at Highway-LRT Grade Crossings .....	772
Section 8A.04	Uniform Provisions .....	773
Section 8A.05	Grade Crossing Elimination .....	773
Section 8A.06	Illumination at Grade Crossings .....	774
Section 8A.07	Quiet Zone Treatments at Highway-Rail Grade Crossings .....	774
Section 8A.08	Temporary Traffic Control Zones .....	774

### **CHAPTER 8B SIGNS AND MARKINGS**

Section 8B.01	Purpose .....	775
Section 8B.02	Sizes of Grade Crossing Signs .....	775
Section 8B.03	Grade Crossing (Crossbuck) Sign (R15-1) and Number of Tracks Plaque (R15-2P) at Active and Passive Grade Crossings .....	775
Section 8B.04	Crossbuck Assemblies with YIELD or STOP Signs at Passive Grade Crossings .....	778
Section 8B.05	Use of STOP (R1-1) or YIELD (R1-2) Signs without Crossbuck Signs at Highway-LRT Grade Crossings .....	782
Section 8B.06	Grade Crossing Advance Warning Signs (W10 Series) .....	782
Section 8B.07	EXEMPT Grade Crossing Plaques (R15-3P, W10-1aP) .....	783
Section 8B.08	Turn Restrictions During Preemption .....	784
Section 8B.09	DO NOT STOP ON TRACKS Sign (R8-8) .....	784
Section 8B.10	TRACKS OUT OF SERVICE Sign (R8-9) and TRAIN TRAFFIC RESUMED- TRACKS IN SERVICE Sign (W10-Y12a) .....	784
Section 8B.11	STOP HERE WHEN FLASHING Signs (R8-10, R8-10a) .....	785
Section 8B.12	STOP HERE ON RED Signs (R10-6, R10-6a) .....	785

Section 8B.13	Light Rail Transit Only Lane Signs (R15-4 Series) .....	785
Section 8B.14	Do Not Pass Light Rail Transit Signs (R15-5, R15-5a) .....	786
Section 8B.15	No Motor Vehicles On Tracks Signs (R15-6, R15-6a) .....	786
Section 8B.16	Divided Highway with Light Rail Transit Crossing Signs (R15-7 Series).....	786
Section 8B.17	LOOK Sign (R15-8) .....	786
Section 8B.18	Emergency Notification Sign (I-13) .....	786
Section 8B.19	Light Rail Transit Approaching-Activated Blank-Out Warning Sign (W10-7) .....	787
Section 8B.20	TRAINS MAY EXCEED 80 MPH Sign (W10-8) .....	787
Section 8B.21	NO TRAIN HORN Sign or Plaque (W10-9, W10-9P) .....	787
Section 8B.22	NO GATES OR LIGHTS Plaque (W10-13P) .....	787
Section 8B.23	Low Ground Clearance Grade Crossing Sign (W10-5).....	787
Section 8B.24	Storage Space Signs (W10-11, W10-11a, W10-11b),W10-Y11c, W10-Y11d, and W10-Y11e) .....	788
Section 8B.25	Skewed Crossing Sign (W10-12) .....	788
Section 8B.26	Light Rail Transit Station Sign (I-12).....	789
Section 8B.27	Pavement Markings .....	789
Section 8B.28	Stop and Yield Lines .....	791
Section 8B.29	Dynamic Envelope Markings .....	792

## **CHAPTER 8C FLASHING-LIGHT SIGNALS, GATES, AND TRAFFIC CONTROL SIGNALS**

Section 8C.01	Introduction .....	794
Section 8C.02	Flashing-Light Signals.....	794
Section 8C.03	Flashing-Light Signals at Highway-LRT Grade Crossings.....	797
Section 8C.04	Automatic Gates .....	797
Section 8C.05	Use of Automatic Gates at LRT Grade Crossings.....	798
Section 8C.06	Four-Quadrant Gate Systems .....	798
Section 8C.07	Wayside Horn Systems.....	800
Section 8C.08	Rail Traffic Detection.....	800
Section 8C.09	Traffic Control Signals at or Near Highway-Rail Grade Crossings .....	801
Section 8C.10	Traffic Control Signals at or Near Highway-LRT Grade Crossings .....	802
Section 8C.11	Use of Traffic Control Signals for Control of LRT Vehicles at Grade Crossings.....	803
Section 8C.12	Grade Crossings Within or In Close Proximity to Circular Intersections .....	805
Section 8C.13	Pedestrian and Bicycle Signals and Crossings at LRT Grade Crossings .....	805

## **CHAPTER 8D PATHWAY GRADE CROSSINGS**

Section 8D.01	Purpose .....	811
Section 8D.02	Use of Standard Devices, Systems, and Practices .....	811
Section 8D.03	Pathway Grade Crossing Signs and Markings .....	811
Section 8D.04	Stop Lines, Edge Lines, and Detectable Warnings .....	811
Section 8D.05	Passive Devices for Pathway Grade Crossings .....	812
Section 8D.06	Active Traffic Control Systems for Pathway Grade Crossings .....	813

## **PART 9 TRAFFIC CONTROL FOR BICYCLE FACILITIES**

### **CHAPTER 9A GENERAL**

Section 9A.01	Requirements for Bicyclist Traffic Control Devices .....	815
Section 9A.02	Scope .....	815

Section 9A.03	Definitions Relating to Bicycles.....	815
Section 9A.04	Maintenance .....	815
Section 9A.05	Relation to Other Documents .....	815
Section 9A.06	Placement Authority .....	815
Section 9A.07	Meaning of Standard, Guidance, Option, and Support.....	815
Section 9A.08	Colors .....	815

## **CHAPTER 9B SIGNS**

Section 9B.01	Application and Placement of Signs.....	816
Section 9B.02	Design of Bicycle Signs .....	816
Section 9B.03	STOP and YIELD Signs (R1-1, R1-2).....	818
Section 9B.04	Bike Lane Signs and Plaques (R3-17, R3-17aP, R3-17bP).....	820
Section 9B.05	BEGIN RIGHT TURN LANE YIELD TO BIKES Sign (R4-4) .....	820
Section 9B.06	Bicycles May Use Full Lane Sign (R4-11) .....	820
Section 9B.07	Bicycle WRONG WAY Sign and RIDE WITH TRAFFIC Plaque (R5-1b, R9-3cP).....	820
Section 9B.08	NO MOTOR VEHICLES Sign (R5-3).....	821
Section 9B.09	Selective Exclusion Signs.....	821
Section 9B.10	No Parking Bike Lane Signs (R7-9, R7-9a) .....	821
Section 9B.11	Bicycle Regulatory Signs (R9-5, R9-6, R10-4, R10-24, R10-25, and R10-26) .....	821
Section 9B.12	Shared-Use Path Restriction Sign (R9-7).....	821
Section 9B.13	Bicycle Signal Actuation Sign (R10-22).....	822
Section 9B.14	Other Regulatory Signs .....	822
Section 9B.15	Turn or Curve Warning Signs (W1 Series) .....	822
Section 9B.16	Intersection Warning Signs (W2 Series) .....	822
Section 9B.17	Bicycle Surface Condition Warning Sign (W8-10).....	822
Section 9B.18	Bicycle Warning and Combined Bicycle/Pedestrian Signs (W11-1 and W11-15) .....	822
Section 9B.19	Other Bicycle Warning Signs .....	824
Section 9B.20	Bicycle Guide Signs (D1-1b, D1-1c, D1-2b, D1-2c, D1-3b, D1-3c, D11-1, D11-1c).....	824
Section 9B.21	Bicycle Route Signs (M1-8, M1-8a, M1-9) .....	826
Section 9B.22	Bicycle Route Sign Auxiliary Plaques .....	828
Section 9B.23	Bicycle Parking Area Sign (D4-3).....	830
Section 9B.24	Reference Location Signs (D10-1 through D10-3) and Intermediate Reference Location Signs (D10-1a through D10-3a).....	830
Section 9B.25	Mode-Specific Guide Signs for Shared-Use Paths (D11-1a, D11-2, D11-3, D11-4).....	831
Section 9B.26	Object Markers .....	831

## **CHAPTER 9C MARKINGS**

Section 9C.01	Functions of Markings.....	832
Section 9C.02	General Principles .....	832
Section 9C.03	Marking Patterns and Colors on Shared-Use Paths.....	832
Section 9C.04	Markings For Bicycle Lanes .....	832
Section 9C.05	Bicycle Detector Symbol.....	836
Section 9C.06	Pavement Markings for Obstructions .....	836
Section 9C.07	Shared Lane Marking .....	836

**CHAPTER 9D SIGNALS**

Section 9D.01 Application ..... 842  
Section 9D.02 Signal Operations for Bicycles ..... 842

<b>APPENDIX A1. CONGRESSIONAL LEGISLATION</b> .....	A1-1
<b>APPENDIX A2. METRIC CONVERSIONS</b> .....	A2-1

## FIGURES

	<u>Page</u>
Figure 1A-1	Process for Requesting and Conducting Experimentations for New Traffic Control Devices... 5
Figure 1A-2	Process for Incorporating New Traffic Control Devices into the MUTCD ..... 8
Figure 2A-1	Examples of Enhanced Conspicuity for Signs ..... 37
Figure 2A-2	Examples of Heights and Lateral Locations of Sign Installations..... 38
Figure 2A-3	Examples of Locations for Some Typical Signs at Intersections ..... 39
Figure 2A-4	Relative Locations of Regulatory, Warning, and Guide Signs on an Intersection Approach... 40
Figure 2B-1	STOP and YIELD Signs and Plaques..... 51
Figure 2B-2	Unsignalized Pedestrian Crosswalk Signs..... 55
Figure 2B-3	Speed Limit and Photo Enforcement Signs and Plaques..... 57
Figure 2B-4	Movement Prohibition and Lane Control Signs and Plaques ..... 60
Figure 2B-5	Intersection Lane Control Sign Arrow Options for Roundabouts ..... 62
Figure 2B-6	Center and Reversible Lane Control Signs and Plaques ..... 65
Figure 2B-7	Location of Reversible Two-Way Left-Turn Signs..... 66
Figure 2B-8	Jughandle Regulatory Signs ..... 68
Figure 2B-9	Examples of Applications of Jughandle Regulatory and Guide Signing ..... 69
Figure 2B-10	Passing, Keep Right, and Slow Traffic Signs..... 72
Figure 2B-11	Selective Exclusion Signs..... 75
Figure 2B-12	Locations of Wrong-Way Signing for Divided Highways with Median Widths of 30 Feet or Wider..... 76
Figure 2B-13	ONE WAY and Divided Highway Crossing Signs ..... 78
Figure 2B-14	Locations of ONE WAY Signs ..... 79
Figure 2B-15	ONE WAY Signing for Divided Highways with Median Widths of 30 Feet or Wider ..... 80
Figure 2B-16	ONE WAY Signing for Divided Highways with Median Widths Narrower Than 30 Feet..... 81
Figure 2B-17	ONE WAY Signing for Divided Highways with Median Widths Narrower Than 30 Feet and Separated Left-Turn Lanes ..... 82
Figure 2B-18	Example of Application of Regulatory Signing and Pavement Markings at an Exit Ramp Termination to Deter Wrong-Way Entry..... 83
Figure 2B-19	Example of Application of Regulatory Signing and Pavement Markings at an Entrance Ramp Terminal Where the Design Does Not Clearly Indicate the Direction of Flow ..... 83
Figure 2B-20	Roundabout Signs and Plaques ..... 84
Figure 2B-21	Example of Regulatory and Warning Signs for a Mini-Roundabout ..... 85
Figure 2B-22	Example of Regulatory and Warning Signs for a One-Lane Roundabout ..... 86
Figure 2B-23	Example of Regulatory and Warning Signs for a Two-Lane Roundabout with Consecutive Double Lefts ..... 87
Figure 2B-24	Parking and Standing Signs and Plaques (R7 Series)..... 88
Figure 2B-25	Parking and Stopping Signs and Plaques (R8 Series) ..... 90
Figure 2B-26	Pedestrian Signs and Plaques ..... 93
Figure 2B-27	Traffic Signal Signs and Plaques..... 96
Figure 2B-28	Ramp Metering Signs ..... 97
Figure 2B-29	Road Closed and Weight Limit Signs ..... 98
Figure 2B-30	Truck Signs..... 99
Figure 2B-31	Headlight Use Signs ..... 100

Figure 2B-32	Other Regulatory Signs and Symbols.....	101
Figure 2C-1	Horizontal Alignment Signs and Plaques.....	109
Figure 2C-2	Example of Warning Signs for a Turn.....	111
Figure 2C-3	Example of Advisory Speed Signing for an Exit Ramp.....	116
Figure 2C-4	Vertical Grade Signs and Plaques .....	117
Figure 2C-5	Miscellaneous Warning Signs .....	118
Figure 2C-6	Roadway and Weather Condition and Advance Traffic Control Signs and Plaques.....	121
Figure 2C-7	Reduced Speed Limit Ahead Signs .....	124
Figure 2C-8	Merging and Passing Signs and Plaques .....	125
Figure 2C-9	Intersection Warning Signs and Plaques .....	127
Figure 2C-10	Vehicular Traffic Warning Signs and Plaques .....	129
Figure 2C-11	Non-Vehicular Warning Signs .....	130
Figure 2C-12	Supplemental Warning Plaques.....	132
Figure 2C-13	Object Markers .....	135
Figure 2D-1	Examples of Color-Coded Destination Guide Signs .....	138
Figure 2D-2	Arrows for Use on Guide Signs.....	141
Figure 2D-3	Route Signs.....	143
Figure 2D-4	Route Sign Auxiliaries .....	145
Figure 2D-5	Advance Turn and Directional Arrow Auxiliary Signs.....	147
Figure 2D-6	Illustration of Directional Assemblies and Other Route Signs (for One Direction of Travel Only) .....	149
Figure 2D-7	Destination and Distance Signs .....	156
Figure 2D-8	Destination Signs for Roundabouts .....	159
Figure 2D-9	Examples of Guide Signs for Roundabouts.....	160
Figure 2D-10	Street Name and Parking Signs .....	163
Figure 2D-11	Example of Interchange Crossroad Signing for a One-Lane Approach.....	166
Figure 2D-12	Example of Minor Interchange Crossroad Signing .....	167
Figure 2D-13	Examples of Multi-Lane Crossroad Signing for a Diamond Interchange.....	168
Figure 2D-14	Examples of Multi-Lane Crossroad Signing for a Partial Cloverleaf Interchange.....	169
Figure 2D-15	Examples of Multi-Lane Crossroad Signing for a Cloverleaf Interchange .....	170
Figure 2D-16	Example of Crossroad Signing for an Entrance Ramp with a Nearby Frontage Road.....	171
Figure 2D-17	Example of Weigh Station Signing .....	174
Figure 2D-18	Examples of Community Wayfinding Guide Signs .....	175
Figure 2D-19	Example of a Community Wayfinding Guide Sign System Showing Direction from a Freeway or Expressway.....	176
Figure 2D-20	Example of a Color-Coded Community Wayfinding Guide Sign System .....	177
Figure 2D-21	Crossover, Truck Lane, and Slow Vehicle Signs .....	179
Figure 2D-22	Examples of Use of the National Scenic Byways Sign .....	181
Figure 2E-1	Example of Guide Sign Spreading .....	186
Figure 2E-2	Pull-Through Signs.....	186
Figure 2E-3	Overhead Arrow-per-Lane Guide Sign for a Multi-Lane Exit with an Option Lane .....	196
Figure 2E-4	Overhead Arrow-per-Lane Guide Signs for a Two-Lane Exit to the Right with an Option Lane .....	197
Figure 2E-5	Overhead Arrow-per-Lane Guide Signs for a Two-Lane Exit to the Right with an Option Lane (Through Lanes Curve to the Left).....	198
Figure 2E-6	Overhead Arrow-per-Lane Guide Signs for a Split with an Option Lane .....	199
Figure 2E-7	Diagrammatic Guide Sign for a Multi-Lane Exit with an Option Lane.....	201
Figure 2E-8	Diagrammatic Guide Signs for a Two-Lane Exit to the Right with an Option Lane.....	202

Figure 2E-9	Diagrammatic Guide Signs for a Two-Lane Exit to the Right with an Option Lane (Through Lanes Curve to the Left).....	203
Figure 2E-10	Diagrammatic Guide Signs for a Split with an Option Lane.....	204
Figure 2E-11	Example of Signing for a Two-Lane Intermediate or Minor Interchange Exit with an Option Lane and a Dropped Lane.....	206
Figure 2E-12	Example of Signing for a Two-Lane Intermediate or Minor Interchange Exit with Option and Auxiliary Lanes .....	207
Figure 2E-13	EXIT ONLY and LEFT Sign Panels.....	208
Figure 2E-14	Guide Signs for a Split with Dedicated Lanes.....	209
Figure 2E-15	Guide Signs for a Single-Lane Exit to the Left with a Dropped Lane .....	210
Figure 2E-16	Guide Signs for a Single-Lane Exit to the Right with a Dropped Lane .....	211
Figure 2E-17	Interstate, Off-Interstate, and U.S. Route Signs .....	212
Figure 2E-18	Eisenhower Interstate System Signs.....	213
Figure 2E-19	Example of Interchange Numbering for Mainline and Circumferential Routes .....	215
Figure 2E-20	Example of Interchange Numbering for Mainline, Loop, and Spur Routes.....	216
Figure 2E-21	Example of Interchange Numbering for Overlapping Routes.....	217
Figure 2E-22	Examples of Interchange Advance Guide Signs, Exit Number Plaques, and LEFT Plaque....	219
Figure 2E-23	Next Exit Plaques .....	220
Figure 2E-24	Supplemental Guide Sign for a Multi-Exit Interchange.....	221
Figure 2E-25	Supplemental Guide Sign for a Park - Ride Facility .....	221
Figure 2E-26	Examples of Interchange Exit Direction Signs.....	222
Figure 2E-27	Interchange Exit Direction Sign with an Advisory Speed Panel.....	223
Figure 2E-28	Exit Gore Signs .....	224
Figure 2E-29	Post-Interchange Distance Sign.....	225
Figure 2E-30	Example of Using an Interchange Sequence Sign for Closely-Spaced Interchanges.....	226
Figure 2E-31	Interchange Sequence Sign.....	227
Figure 2E-32	Community Interchanges Identification Sign.....	227
Figure 2E-33	NEXT EXITS Sign.....	227
Figure 2E-34	Examples of Guide Signs for a Freeway-to-Freeway Interchange.....	229
Figure 2E-35	Examples of Guide Signs for a Full Cloverleaf Interchange.....	231
Figure 2E-36	Examples of Guide Signs for a Full Cloverleaf Interchange with Collector-Distributor Roadways.....	233
Figure 2E-37	Examples of Guide Signs for a Partial Cloverleaf Interchange.....	234
Figure 2E-38	Examples of Guide Signs for a Diamond Interchange .....	235
Figure 2E-39	Examples of Guide Signs for a Diamond Interchange in an Urban Area.....	237
Figure 2E-40	Examples of Guide Signs for a Minor Interchange .....	238
Figure 2F-1	Examples of ETC Account Pictographs and Use of Purple Backgrounds and Underlay Panels.....	241
Figure 2F-2	Toll Plaza Regulatory Signs and Plaques.....	242
Figure 2F-3	Toll Plaza Warning Signs and Plaques.....	243
Figure 2F-4	ETC Account-Only Auxiliary Signs for Use in Route Sign Assemblies .....	245
Figure 2F-5	Examples of Guide Signs for Entrances to Toll Highways or Ramps.....	247
Figure 2F-6	Examples of Guide Signs for the Entrance to a Toll Highway on which Tolls are Collected Electronically Only .....	248
Figure 2F-7	Examples of Guide Signs for Alternative Toll and Non-Toll Ramp Connections to a Non-Toll Highway.....	249
Figure 2F-8	Examples of Conventional Toll Plaza Advance Signs .....	250
Figure 2F-9	Examples of Toll Plaza Canopy Signs .....	250

Figure 2F-10	Examples of Mainline Toll Plaza Approach and Canopy Signing .....	252
Figure 2F-11	Examples of Guide Signs for a Mainline Toll Plaza on a Diverging Alignment from Open-Road ETC Lanes.....	253
Figure 2G-1	Preferential Lane Regulatory Signs and Plaques.....	257
Figure 2G-2	Example of Signing for an Added Continuous-Access Contiguous or Buffer- Separated HOV Lane.....	263
Figure 2G-3	Example of Signing for a General-Purpose Lane that Becomes a Continuous- Access Contiguous or Buffer-Separated HOV Lane.....	264
Figure 2G-4	Examples of Warning Signs and Plaques Applicable Only to Preferential Lanes .....	266
Figure 2G-5	Example of an Overhead Advance Guide Sign for a Preferential Lane Entrance .....	269
Figure 2G-6	Examples of Overhead or Post-Mounted Preferential Lane Entrance Direction Signs .....	269
Figure 2G-7	Entrance Gore Signs for Barrier-Separated Preferential Lanes .....	270
Figure 2G-8	Example of Signing for an Entrance to Access-Restricted HOV Lanes.....	271
Figure 2G-9	Example of Signing for an Intermediate Entry to a Barrier- or Buffer-Separated HOV Lane.....	273
Figure 2G-10	Example of Signing for the Intermediate Entry to, Egress from, and End of Access- Restricted HOV Lanes.....	274
Figure 2G-11	Examples of Barrier-Mounted Guide Signs for an Intermediate Egress from Preferential Lanes.....	275
Figure 2G-12	Examples of Guide Signs for an Intermediate Egress from a Barrier-or Buffer- Separated HOV Lane.....	276
Figure 2G-13	Example of Signing for a Direct Entrance Ramp to an HOV Lane from a Park- and-Ride Facility and a Local Street.....	277
Figure 2G-14	Exit Gore Sign for a Direct Exit from a Preferential Lane .....	278
Figure 2G-15	Examples of Guide Signs for Direct HOV Lane Entrance and Exit Ramps.....	279
Figure 2G-16	Examples of Guide Signs for a Direct Access Ramp between HOV Lanes on Separate Freeways.....	280
Figure 2G-17	Regulatory Signs for Managed Lanes .....	282
Figure 2G-18	Examples of Guide Signs for Entrances to Priced Managed Lanes .....	283
Figure 2G-19	Example of an Exit Destinations Sign for a Managed Lane.....	284
Figure 2G-20	Example of a Comparative Travel Time Information Sign for Preferential or Managed Lanes.....	284
Figure 2G-21	Example of Signing for the Entrance to an Access-Restricted Priced Managed Lane.....	285
Figure 2G-22	Example of Signing for the Entrance to an Access-Restricted Priced Managed Lane Where a General-Purpose Lane Becomes the Managed Lane.....	286
Figure 2G-23	Example of Signing for an Intermediate Entry to a Barrier- or Buffer-Separated Priced Managed Lane.....	287
Figure 2G-24	Example of Signing for the Intermediate Entry to, Egress from, and End of Access- Restricted Priced Managed Lanes .....	288
Figure 2G-25	Examples of Guide Signs for an Intermediate Egress from a Barrier- or Buffer- Separated HOV Lane.....	289
Figure 2G-26	Examples of Guide Signs for Direct Managed Lane Entrance and Exit Ramps .....	290
Figure 2G-27	Examples of Guide Signs for a Direct Access Ramp between Managed Lanes on Separate Freeways.....	291
Figure 2G-28	Examples of Guide Signs for a Direct Entrance Ramp to a Priced Managed Lane and Trailblazing to a Nearby Entrance to the General-Purpose Lanes.....	292
Figure 2G-29	Examples of Guide Signs for Separate Entrance Ramps to General-Purpose and Priced Managed Lanes from the Same Crossroad.....	293
Figure 2H-1	General Information and Miscellaneous Information Signs.....	295

Figure 2H-2	Reference Location Signs.....	297
Figure 2H-3	Intermediate Reference Location Signs.....	297
Figure 2H-4	Enhanced Reference Location Signs .....	298
Figure 2H-5	Examples of Acknowledgment Sign Designs .....	300
Figure 2I-1	General Service Signs and Plaques .....	303
Figure 2I-2	Example of Next Services Plaque.....	304
Figure 2I-3	Examples of General Service Signs with and without Exit Numbering.....	306
Figure 2I-4	Examples of Interstate Oasis Signs and Plaques .....	308
Figure 2I-5	Rest Area and Other Roadside Area Signs.....	309
Figure 2I-5a	Indiana Rest Area and Other Roadside Area Signs.....	310
Figure 2I-6	Brake Check Area and Chain-Up Area Signs.....	310
Figure 2I-7	Examples of Tourist Information and Welcome Center Signs.....	311
Figure 2I-8	Radio, Telephone, and Carpool Information Signs .....	312
Figure 2I-9	Travel Time Sign Example.....	314
Figure 2J-1	Examples of Specific Service Signs .....	317
Figure 2J-2	Example of Specific Service Sign Locations .....	318
Figure 2J-3	Examples of Supplemental Messages on Logo Sign Panels .....	319
Figure 2J-4	Example of RV Access Supplemental Messages on Logo Sign Panels .....	319
Figure 2J-5	Examples of Specific Service Trailblazer Signs.....	322
Figure 2K-1	Examples of Tourist-Oriented Directional Signs .....	325
Figure 2K-2	Examples of Intersection Approach Signs and Advance Signs for Tourist-Oriented Directional Signs .....	326
Figure 2M-1	Examples of Use of Arrows, Educational Plaques, and Prohibitory Slashes .....	337
Figure 2M-2	Examples of Recreational and Cultural Interest Area Guide Signs.....	338
Figure 2M-3	Arrangement, Height, and Lateral Position of Signs Located Within Recreational and Cultural Interest Areas.....	339
Figure 2M-4	Examples of Symbol and Destination Guide Signing Layout.....	340
Figure 2M-5	Recreational and Cultural Interest Area Symbol Signs for General Applications .....	341
Figure 2M-6	Recreational and Cultural Interest Area Symbol Signs for Accommodations .....	342
Figure 2M-7	Recreational and Cultural Interest Area Symbol Signs for Services.....	342
Figure 2M-8	Recreational and Cultural Interest Area Symbol Signs for Land Recreation.....	343
Figure 2M-9	Recreational and Cultural Interest Area Symbol Signs for Water Recreation .....	344
Figure 2M-10	Recreational and Cultural Interest Area Symbol Signs for Winter Recreation.....	345
Figure 2N-1	Emergency Management Signs .....	347
Figure 3B-1	Examples of Two-Lane, Two-Way Marking Applications .....	354
Figure 3B-2	Examples of Four-or-More Lane, Two-Way Marking Applications.....	355
Figure 3B-3	Examples of Three-Lane, Two-Way Marking Applications .....	356
Figure 3B-4	Method of Locating and Determining the Limits of No-Passing Zones at Curves .....	357
Figure 3B-5	Example of Application of Three-Lane, Two-Way Marking for Changing Direction of the Center Lane .....	359
Figure 3B-6	Example of Reversible Lane Marking Application.....	360
Figure 3B-7	Example of Two-Way Left Turn Lane Marking Applications.....	361
Figure 3B.8	Examples of Dotted Line and Channelizing Line Applications for Exit Ramp Markings.....	362
Figure 3B.9	Examples of Dotted Line and Channelizing Line Applications for Entrance Ramp Markings.....	364
Figure 3B.10	Examples of Applications of Freeway and Expressway Lane-Drop Markings.....	367
Figure 3B.11	Examples of Applications of Conventional Road Lane-Drop Markings.....	372

Figure 3B.12	Example of Solid Double White Lines Used to Prohibit Lane Changing .....	374
Figure 3B.13	Examples of Line Extensions through Intersections .....	376
Figure 3B.14	Examples of Applications of Lane-Reduction Transition Markings .....	379
Figure 3B.15	Examples of Applications of Markings for Obstructions in the Roadway .....	381
Figure 3B.16	Recommended Yield Line Layouts .....	386
Figure 3B.17	Examples of Yield Lines at Unsignalized Midblock Crosswalks .....	387
Figure 3B.18	Do Not Block Intersection Markings.....	388
Figure 3B.19	Examples of Crosswalk Markings.....	388
Figure 3B.20	Example of Crosswalk Markings for an Exclusive Pedestrian Phase that Permits Diagonal Crossing .....	389
Figure 3B.21	Examples of Parking Space Markings.....	390
Figure 3B.22	International Symbol of Accessibility Parking Space Marking .....	391
Figure 3B.23	Example of Elongated Letters for Word Pavement Markings.....	391
Figure 3B.24	Examples of Standard Arrows for Pavement Markings .....	392
Figure 3B.25	Examples of Elongated Route Shields for Pavement Markings.....	394
Figure 3B.26	Yield Ahead Triangle Symbols .....	395
Figure 3B.27	Examples of Lane-Use Control Word and Arrow Pavement Markings .....	396
Figure 3B.28	Example of the Application of Speed Reduction Markings .....	398
Figure 3B.29	Pavement Markings for Speed Humps without Crosswalk.....	400
Figure 3B.30	Pavement Markings for Speed Tables or Speed Humps with Crosswalk .....	401
Figure 3B.31	Advance Warning Markings for Speed Humps.....	402
Figure 3C.1	Example of Markings for Approach and Circulatory Roadways at a Roundabout .....	403
Figure 3C.2	Lane-Use Arrow Pavement Marking Options for Roundabout Approaches.....	404
Figure 3C.3	Example of Markings for a One-Lane Roundabout .....	404
Figure 3C.4	Example of Markings for a Two-Lane Roundabout with One- and Two-Lane Approaches.....	405
Figure 3C.5	Example of Markings for a Two-Lane Roundabout with One-Lane Exits .....	407
Figure 3C.6	Example of Markings for a Two-Lane Roundabout with Two-Lane Exits.....	408
Figure 3C.7	Example of Markings for a Two-Lane Roundabout with a Double Left Turn.....	409
Figure 3C.8	Example of Markings for a Two-Lane Roundabout with a Double Right Turn.....	410
Figure 3C.9	Example of Markings for a Two-Lane Roundabout with Consecutive Double Lefts .....	411
Figure 3C.10	Example of Markings for a Three-Lane Roundabout with Two- and Three-Lane Approaches.....	412
Figure 3C.11	Example of Markings for a Three-Lane Roundabout with Three-Lane Approaches .....	413
Figure 3C.12	Example of Markings for a Three-Lane Roundabout with Two-Lane Exits.....	414
Figure 3C.13	Example of Markings for Two Linked Roundabouts.....	415
Figure 3C.14	Example of Markings for a Diamond Interchange with Two Circular-Shaped Roundabout Ramp Terminals.....	416
Figure 3D-1	Markings for Barrier-Separated Preferential Lanes.....	422
Figure 3D-2	Markings for Buffer-Separated Preferential Lanes.....	422
Figure 3D-3	Markings for Contiguous Preferential Lanes.....	424
Figure 3D-4	Markings for Counter-Flow Preferential Lanes on Divided Highways.....	426
Figure 3F-1	Examples of Delineator Placement .....	429
Figure 3J-1	Examples of Longitudinal Rumble Strip Markings.....	436
Figure 4C-1	Warrant 2, Four-Hour Vehicular Volume .....	445
Figure 4C-2	Warrant 2, Four-Hour Vehicular Volume (70% Factor) .....	445
Figure 4C-3	Warrant 3, Peak Hour.....	447
Figure 4C-4	Warrant 3, Peak Hour (70% Factor).....	447
Figure 4C-5	Warrant 4, Pedestrian Four-Hour Volume .....	450
Figure 4C-6	Warrant 4, Pedestrian Four-Hour Volume (70% Factor) .....	450

Figure 4C-7	Warrant 4, Pedestrian Peak Hour .....	451
Figure 4C-8	Warrant 4, Pedestrian Peak Hour (70% Factor) .....	451
Figure 4C-9	Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)...	454
Figure 4C-10	Warrant 9, Intersection Near a Grade Crossing (Two or More Approach Lanes at the Track Crossing)	454
Figure 4D-1	Example of U-Turn Signal Face .....	466
Figure 4D-2	Typical Arrangements of Signal Sections in Signal Faces That Do Not Control Turning Movements .....	468
Figure 4D-3	Recommended Vehicular Signal Faces for Approaches with Posted, Statutory, or 85 <sup>th</sup> Percentile Speed of 45 mph or Higher .....	470
Figure 4D-4	Lateral and Longitudinal Location of Primary Signal Faces .....	473
Figure 4D-5	Maximum Mounting Height of Signal Faces Located Between 40 Feet and 53 Feet from Stop Line .....	475
Figure 4D-6	Typical Position and Arrangements of Shared Signal Faces for Permissive Only Mode Left Turns .....	477
Figure 4D-7	Typical Position and Arrangements of Separate Signal Faces with Flashing Yellow Arrow for Permissive Only Mode Left Turns .....	478
Figure 4D-8	Typical Position and Arrangements of Separate Signal Faces with Flashing Red Arrow for Permissive Only Mode and Protected/Permissive Mode Left Turns .....	479
Figure 4D-9	Typical Positions and Arrangements of Shared Signal Faces for Protected Only Mode Left Turns .....	480
Figure 4D-10	Typical Position and Arrangements of Separate Signal Faces for Protected Only Mode Left Turns .....	481
Figure 4D-11	Typical Position and Arrangements of Shared Signal Faces for Protected/Permissive Mode Left Turns .....	482
Figure 4D-12	Typical Position and Arrangements of Separate Signal Faces with Flashing Yellow Arrow for Protected/Permissive Mode and Protected Only Mode Left Turns .....	483
Figure 4D-13	Typical Positions and Arrangements of Shared Signal Faces for Permissive Only Mode Right Turns .....	486
Figure 4D-14	Typical Position and Arrangements of Separate Signal Faces with Flashing Yellow Arrow for Permissive Only Mode Right Turns .....	487
Figure 4D-15	Typical Position and Arrangements of Separate Signal Faces with Flashing Red Arrow for Permissive Only Mode and Protected/Permissive Mode Right Turns .....	488
Figure 4D-16	Typical Positions and Arrangements of Shared Signal Faces for Protected Only Mode Right Turns .....	489
Figure 4D-17	Typical Position and Arrangements of Separate Signal Faces for Protected Only Mode Right Turns .....	490
Figure 4D-18	Typical Positions and Arrangements of Shared Signal Faces for Protected/Permissive Mode Right Turns .....	491
Figure 4D-19	Typical Position and Arrangements of Separate Signal Faces with Flashing Yellow Arrow for Protected/Permissive Mode and Protected Only Mode Right Turns .....	492
Figure 4D-20	Signal Indications for Approaches with a Shared Left-Turn/Right-Turn Lane and No Through Movement .....	496
Figure 4E-1	Typical Pedestrian Signal Indications .....	506
Figure 4E-2	Pedestrian Intervals .....	508
Figure 4E-3	Pushbutton Location Area .....	511
Figure 4E-4	Typical Pushbutton Locations .....	512
Figure 4F-1	Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways.....	520
Figure 4F-2	Guidelines for the Installation of Pedestrian Hybrid Beacons on High-Speed Roadways ....	520

Figure 4F-3	Sequence for a Pedestrian Hybrid Beacon .....	521
Figure 4G-1	Sequence for an Emergency-Vehicle Hybrid Beacon .....	525
Figure 4M-1	Left-Turn Lane-Use Control Signals.....	536
Figure 5B-1	Regulatory Signs on Low-Volume Roads.....	544
Figure 5B-2	Parking Signs and Plaques on Low-Volume Roads .....	545
Figure 5C-1	Horizontal Alignment and Intersection Warning Signs and Plaques and Object Markers on Low-Volume Roads .....	546
Figure 5C-2	Other Warning Signs and Plaques on Low-Volume Roads.....	548
Figure 5F-1	Highway-Rail Grade Crossing Signs and Plaques for Low-Volume Roads .....	552
Figure 5G-1	Temporary Traffic Control Signs and Plaques on Low-Volume Roads.....	555
Figure 6C-1	Component Parts of a Temporary Traffic Control Zone .....	563
Figure 6C-2	Types of Tapers and Buffer Spaces.....	566
Figure 6C-3	Example of a One-Lane, Two-Way Traffic Taper.....	569
Figure 6E-1	Example of the Use of a STOP/SLOW Automated Flagger Assistance Device (AFAD) .....	580
Figure 6E-2	Example of the Use of a Red/Yellow Lens Automated Flagger Assistance Device (AFAD).....	582
Figure 6E-3	Use of Hand-Signaling Devices by Flaggers .....	584
Figure 6F-1	Height and Lateral Location of Signs—Typical Installations .....	591
Figure 6F-2	Methods of Mounting Signs Other Than on Posts .....	592
Figure 6F-3	Regulatory Signs and Plaques in Temporary Traffic Control Zones .....	594
Figure 6F-4	Warning Signs and Plaques in Temporary Traffic Control Zones .....	598
Figure 6F-5	Exit Open and Closed and Detour Signs .....	602
Figure 6F-6	Advance Warning Arrow Board Display Specifications.....	612
Figure 6F-7	Channelizing Devices.....	615
Figure 6H-1	Work Beyond the Shoulder (TA -1) .....	645
Figure 6H-2	Blasting Zone (TA -2).....	647
Figure 6H-3	Work on the Shoulders (TA -3).....	649
Figure 6H-4	Short-Duration or Mobile Operation on a Shoulder (TA -4) .....	651
Figure 6H-5	Shoulder Closure on a Freeway (TA -5).....	653
Figure 6H-6	Shoulder Work with Minor Encroachment (TA -6) .....	655
Figure 6H-7	Road Closure with a Diversion (TA -7).....	657
Figure 6H-8	Road Closure with an Off-Site Detour (TA -8).....	659
Figure 6H-9	Overlapping Routes with a Detour (TA -9) .....	661
Figure 6H-10	Lane Closure on a Two-Lane Road Using Flaggers (TA -10).....	663
Figure 6H-11	Lane Closure on a Two-Lane Road with Low Traffic Volumes (TA -11) .....	665
Figure 6H-12	Lane Closure on a Two-Lane Road Using Traffic Control Signals (TA -12).....	667
Figure 6H-13	Temporary Road Closure (TA -13).....	669
Figure 6H-13AY	Short Term or Short Duration Work in a Roundabout (TA-13AY) .....	671
Figure 6H-14	Haul Road Crossing (TA -14).....	673
Figure 6H-15	Work in the Center of a Road with Low Traffic Volumes (TA -15).....	675
Figure 6H-16	Surveying Along the Center Line of a Road with Low Traffic Volumes (TA-16).....	677
Figure 6H-17	Mobile Operations on a Two-Lane Road (TA-17) .....	679
Figure 6H-17AY	Mobile Operations on a Two-Lane Road Using Flaggers (TA-17AY).....	681
Figure 6H-18	Lane Closure on a Minor Street (TA-18) .....	683
Figure 6H-19	Detour for One Travel Direction (TA-19).....	685
Figure 6H-20	Detour for a Closed Street (TA-20).....	687
Figure 6H-21	Lane Closure on the Near Side of an Intersection (TA-21).....	689
Figure 6H-22	Right-Hand Lane Closure on the Far Side of an Intersection (TA-22) .....	691
Figure 6H-23	Left-Hand Lane Closure on the Far Side of an Intersection (TA-23).....	693

Figure 6H-24	Half Road Closure on the Far Side of an Intersection (TA-24).....	695
Figure 6H-25	Multiple Lane Closures at an Intersection (TA-25).....	697
Figure 6H-26	Closure in the Center of an Intersection (TA-26).....	699
Figure 6H-27	Closure at the Side of an Intersection (TA-27).....	701
Figure 6H-28	Sidewalk Detour or Diversion (TA-28).....	703
Figure 6H-29	Crosswalk Closures and Pedestrian Detours (TA-29).....	705
Figure 6H-30	Interior Lane Closure on a Multi-Lane Street (TA-30).....	707
Figure 6H-30AY	Work in a Dual Left-Turn Lane (TA-30AY).....	709
Figure 6H-31	Lane Closures on a Street with Uneven Directional Volumes (TA-31).....	711
Figure 6H-32	Half Road Closure on a Multi-Lane, High-Speed Highway (TA-32).....	713
Figure 6H-32AY	Lane Shift on a Road with a Dual Left-Turn Lane (TA-32AY).....	715
Figure 6H-33	Stationary Lane Closure on a Divided Highway (TA-33).....	717
Figure 6H-34	Lane Closure with a Temporary Traffic Barrier (TA-34).....	719
Figure 6H-35	Mobile Operation on a Multi-Lane Road (TA-35).....	721
Figure 6H-35AY	Mobile Operation on Multiple Lanes of a Multi-Lane Divided Road (TA-35AY).....	723
Figure 6H-36	Lane Shift on a Freeway (TA-36).....	725
Figure 6H-37	Double Lane Closure on a Freeway (TA-37).....	727
Figure 6H-38	Interior Lane Closure on a Freeway (TA-38).....	729
Figure 6H-39	Median Crossover on a Freeway (TA-39).....	731
Figure 6H-40	Median Crossover for an Entrance Ramp (TA-40).....	733
Figure 6H-41	Median Crossover for an Exit Ramp (TA-41).....	735
Figure 6H-42	Work in the Vicinity of an Exit Ramp (TA-42).....	737
Figure 6H-43	Partial Exit Ramp Closure on the Right-hand Side (TA-43).....	739
Figure 6H-43AY	Partial Exit Ramp Closure with Work in Gore Area (TA-43AY).....	741
Figure 6H-44	Work in the Vicinity of an Entrance Ramp (TA-44).....	743
Figure 6H-45	Temporary Reversible Lane Using Movable Barriers (TA-45).....	745
Figure 6H-46	Work in the Vicinity of a Grade Crossing (TA-46).....	747
Figure 6I-1	Examples of Traffic Incident Management Area Signs.....	749
Figure 7A-1	Example of School Route Plan Map.....	754
Figure 7B-1	School Area Signs.....	757
Figure 7B-2	Example of Signing for a Higher Fines School Zone without a School Crossing.....	759
Figure 7B-3	Example of Signing for a Higher Fines School Zone with a School Speed Limit.....	760
Figure 7B-4	Example of Signing for a School Crossing Outside of a School Zone.....	761
Figure 7B-5	Example of Signing for a School Zone with a School Speed Limit and a School Crossing.....	762
Figure 7B-6	In-Street Signs in School Areas.....	763
Figure 7C-1	Two-Lane Pavement Marking of "SCHOOL".....	767
Figure 8B-1	Regulatory Signs and Plaques for Grade Crossings.....	777
Figure 8B-2	Crossbuck Assembly with a YIELD or STOP Sign on the Crossbuck Sign Support.....	778
Figure 8B-3	Crossbuck Assembly with a YIELD or STOP Sign on a Separate Sign Support.....	779
Figure 8B-4	Warning Signs and Plaques for Grade Crossings.....	783
Figure 8B-5	Example of an Emergency Notification Sign.....	787
Figure 8B-6	Example of Placement of Warning Signs and Pavement Markings at Grade Crossings.....	790
Figure 8B-7	Grade Crossing Pavement Markings.....	791
Figure 8B-8	Example of Dynamic Envelope Pavement Markings at Grade Crossings.....	792
Figure 8B-9	Examples of Light Rail Transit Vehicle Dynamic Envelope Markings for Mixed-Use Alignments.....	793
Figure 8C-1	Composite Drawing of Active Traffic Control Devices for Grade Crossings Showing Clearances...	795
Figure 8C-2	Example of Location Plan for Flashing-Light Signals and Four-Quadrant Gates.....	799

Figure 8C-3	Light Rail Transit Signals.....	804
Figure 8C-4	Example of Flashing-Light Signal Assembly for Pedestrian Crossings .....	806
Figure 8C-5	Example of a Shared Pedestrian/Roadway Gate .....	807
Figure 8C-6	Example of a Separate Pedestrian Gate.....	807
Figure 8C-7	Examples of Placement of Pedestrian Gates .....	808
Figure 8C-8	Example of Swing Gates .....	809
Figure 8C-9	Example of Pedestrian Barriers at an Offset Grade Crossing.....	809
Figure 8C-10	Examples of Pedestrian Barrier Installation at an Offset Non-Intersection Grade Crossing ...	810
Figure 8D-1	Example of Signing and Markings for a Pathway Grade Crossing .....	812
Figure 9B-1	Sign Placement on Shared-Use Paths.....	816
Figure 9B-2	Regulatory Signs and Plaques for Bicycle Facilities .....	819
Figure 9B-3	Warning Signs and Plaques and Object Markers for Bicycle Facilities .....	823
Figure 9B-4	Guide Signs and Plaques for Bicycle Facilities .....	825
Figure 9B-5	Example of Signing for the Beginning and End of a Designated Bicycle Route on a Shared-Use Path .....	827
Figure 9B-6	Example of Bicycle Guide Signing .....	828
Figure 9B-7	Examples of Signing and Markings for a Shared-Use Path Crossing .....	829
Figure 9B-8	Example of Mode-Specific Guide Signing on a Shared-Use Path .....	831
Figure 9C-1	Example of Intersection Pavement Markings-Designated Bicycle Lane with Left-Turn Area, Heavy Turn Volumes, Parking, One-Way Traffic, or Divided Highway .....	833
Figure 9C-2	Examples of Center Line Markings for Shared-Use Paths.....	834
Figure 9C-3	Word, Symbol, and Arrow Pavement Markings for Bicycle Lanes.....	835
Figure 9C-4	Example of Bicycle Lane Treatment at a Right Turn Only Lane.....	837
Figure 9C-5	Example of Bicycle Lane Treatment at Parking Lane into a Right Turn Only Lane .....	838
Figure 9C-6	Example of Pavement Markings for Bicycle Lanes on a Two-Way Street.....	839
Figure 9C-7	Bicycle Detector Pavement Marking.....	840
Figure 9C-8	Examples of Obstruction Pavement Markings .....	841
Figure 9C-9	Shared Lane Marking .....	841

## TABLES

	<u>Page</u>
Table I-1	Evolution of the MUTCD..... I-4
Table I-2	Target Compliance Dates Established by the FHWA .....
Table 1A-1	Acceptable Abbreviations .....
Table 1A-2	Abbreviations that Shall be Used Only on Portable Changeable Message Signs .....
Table 1A-3	Unacceptable Abbreviations.....
Table 2A-1	Illumination of Sign Elements.....
Table 2A-2	Retroreflection of Sign Elements .....
Table 2A-3	Minimum Maintained Retroreflectivity Levels .....
Table 2A-4	Use of Sign Shapes.....
Table 2A-5	Common Uses of Sign Colors .....
Table 2B-1	Regulatory Sign and Plaque Sizes.....
Table 2B-2	Meanings of Symbols and Legends on Reversible Lane Control Signs.....
Table 2C-1	Categories of Warning Signs and Plaques.....
Table 2C-2	Warning Sign and Plaque Sizes.....
Table 2C-3	Minimum Size of Supplemental Warning Plaques.....
Table 2C-4	Guidelines for Advance Placement of Warning Signs .....
Table 2C-5	Horizontal Alignment Sign Selection.....

Table 2C-6	Approximate Spacing of Chevron Alignment Signs on Horizontal Curves.....	113
Table 2D-1	Conventional Road Guide Sign Sizes.....	139
Table 2D-2	Recommended Minimum Letter Heights on Street Name Signs.....	164
Table 2E-1	Freeway or Expressway Guide Sign and Plaque Sizes.....	188
Table 2E-2	Minimum Letter and Numeral Sizes for Expressway Guide Signs According to Interchange Classification .....	190
Table 2E-3	Minimum Letter and Numeral Sizes for Expressway Guide Signs According to Sign Type .....	191
Table 2E-4	Minimum Letter and Numeral Sizes for Freeway Guide Signs According to Interchange Classification .....	192
Table 2E-5	Minimum Letter and Numeral Sizes for Freeway Guide Signs According to Sign Type .....	193
Table 2F-1	Toll Facility Sign and Plaque Minimum Sizes .....	239
Table 2G-1	Managed and Preferential Lanes Sign and Plaque Minimum Sizes .....	256
Table 2H-1	General Information Sign Sizes.....	294
Table 2I-1	General Service Sign and Plaque Sizes .....	301
Table 2J-1	Minimum Letter and Numeral Sizes for Specific Service Signs According to Sign Type....	319
Table 2L-1	Example of Units of Information.....	332
Table 2M-1	Category Chart for Recreational and Cultural Interest Area Symbols .....	335
Table 2N-1	Emergency Management Sign Sizes .....	347
Table 3B-1	Minimum Passing Sight Distances for No-Passing Zone Markings .....	356
Table 3D-1	Standard Edge Line and Lane Line Markings for Preferential Lanes .....	421
Table 3F-1	Approximate Spacing for Delineators on Horizontal Curves.....	431
Table 4C-1	Warrant 1, Eight-Hour Vehicular Volume .....	443
Table 4C-2	Warrant 1, Eight Hour Vehicular Volume (ADT Equivalent).....	443
Table 4C-3	Warrant 2, Four Hour Vehicular Volume, Mathematical Equation Equivalency to Figure 4C-1 .....	446
Table 4C-4	Warrant 2, Four Hour Vehicular Volume (70% Factor), Mathematical Equation Equivalency to Figure 4C-2.....	446
Table 4C-5	Warrant 3, Peak Hour Vehicular Volume, Mathematical Equation Equivalency to Figure 4C-3..	448
Table 4C-6	Warrant 3, Peak Hour Vehicular Volume (70% Factor), Mathematical Equation Equivalency to Figure 4C-4.....	448
Table 4C-7	Warrant 4, Pedestrian Volume, Mathematical Equation Equivalency to Figures 4C-5 thru 4C-8 .....	448
Table 4C-8	Warrant 5, School Crossing, Vehicular Volume Equivalency For Sufficient Gaps In Vehicular Flow .....	448
Table 4C-9	Warrant 9, Adjustment Factor for Daily Frequency of Rail Traffic.....	455
Table 4C-10	Warrant 9, Adjustment Factor for Percentage of High-Occupancy Buses.....	455
Table 4C-11	Warrant 9, Adjustment Factor for Percentage of Tractor-Trailer Trucks.....	455
Table 4C-12	Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing) Mathematical Equation Equivalency to Figure 4C 9 .....	456
Table 4C-13	Warrant 9, Intersection Near a Grade Crossing (Two or More Approach Lanes at the Track Crossing) Mathematical Equation Equivalency to Figure 4C-9.....	457
Table 4D-1	Recommended Minimum Number of Primary Signal Faces for Through Traffic on Approaches with Posted, Statutory, or 85 <sup>th</sup> -Percentile Speed of 45 mph or Higher.....	471
Table 4D-2	Minimum Sight Distance for Signal Visibility.....	471
Table 5A-1	Sign and Plaque Sizes on Low-Volume Roads .....	542
Table 6C-1	Recommended Advance Warning Sign Minimum Spacing.....	564
Table 6C-2	Stopping Sight Distance as a Function of Speed.....	565
Table 6C-3	Taper Length Criteria for Temporary Traffic Control Zones .....	567
Table 6C-4	Formulas for Determining Taper Length.....	567

Table 6E-1	Stopping Sight Distance as a Function of Speed.....	585
Table 6F-1	Temporary Traffic Control Zone Sign and Plaque Sizes .....	588
Table 6H-1	Index to Typical Applications .....	642
Table 6H-2	Meaning of Symbols on Typical Application Diagrams .....	643
Table 6H-3	Meaning of Letter Codes on Typical Application Diagrams.....	643
Table 6H-4	Formulas for Determining Taper Length.....	643
Table 7B-1	School Area Sign and Plaque Sizes .....	755
Table 8B-1	Grade Crossing Sign and Plaque Minimum Sizes.....	776
Table 9B-1	Bicycle Facility Sign and Plaque Minimum Sizes .....	817
Table A2-1	Conversion of Inches to Millimeters .....	A2-1
Table A2-2	Conversion of Feet to Meters .....	A2-1
Table A2-3	Conversion of Miles to Kilometers .....	A2-1
Table A2-4	Conversion of Miles per Hour to Kilometers/Hour.....	A2-1

(This page left intentionally blank)

# INDIANA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

## INTRODUCTION

### Introduction and General Provisions

This Edition of the Indiana Manual on Uniform Traffic Control Devices (IMUTCD), has been established and the contents contained herein shall be used by state and local officials in determining the necessity for any traffic control device in their respective jurisdictions. It also applies to private roadways and parking areas open to the public where the use of traffic control devices are needed.

The principal purpose of this IMUTCD is to give the size, shape, color, etc. of the signs, markings, and devices, which may be used under varying circumstances.

One of the primary purposes of this Manual is to promote uniformity in the type of devices used throughout the State. The devices suggested and their applications are to be used in conjunction with field investigation and engineering judgment; however, these devices are not a substitute for the exercise of reasonable care on the part of the highway user. This Manual shall not be construed as an instrument to mandate the use of any of the control devices or procedures at a particular location.

### Legal Authority

It is the intent, in the adoption of the IMUCTD, to meet the various requirements of the statutes of the State of Indiana. In particular, the following statutes are considered to be enabling legislation which allows for the promulgation of the Indiana Manual on Uniform Traffic Control Devices for Streets and Highways: Indiana Code 4-22-2, 9-21-2, 9-21-3, and 9-21-4, and specifically in sections:

#### IC 9-21-2-1

Sec. 1. "The Indiana department of transportation shall adopt rules under IC 4-22-2 to create the Indiana Manual on Uniform Traffic Control Devices for Streets and Highways."

#### IC 9-21-2-2

Sec. 2. "The Indiana Manual on Uniform Traffic Control Devices for Streets and Highways must substantially conform with the Manual on Uniform Traffic Control Devices for Streets and Highways, 1961 Edition, and the Manual for Signing and Pavement Marking for the National System for Interstate and Defense Highways, 1962 Edition, and all other manuals and revisions to the manuals that have the approval of the Federal Highway Administrator."

#### IC 9-21-2-3

Sec. 3. "All manuals (including revisions to the manuals) described in section 2 of this chapter may be considered to become a part of the Indiana Manual on Uniform Traffic Control Devices for Streets and Highways if the following conditions exist:

- (1) The Indiana Department of Transportation concurs in the revisions.
- (2) The Indiana Department of Transportation adopts the manuals (including revisions) by order of the commissioner of the Indiana department of transportation

#### IC 9-21-2-4

Sec. 4. "The Indiana Department of Transportation may add control devices to the state manual in those areas where the federal standards are silent."

#### IC 9-21-4-1

Sec. 1. "A governmental agency in Indiana that is responsible for the signing, marking, and erection of traffic control devices on streets and highways within Indiana shall follow the Indiana Manual on Uniform Traffic Control Devices for Streets and Highways."

**Revisions**

Revisions to the IMUTCD will be accomplished as specified in Indiana Code 9-21-2-3. Generally any change to the IMUTCD need not be implemented immediately unless specifically so stated in the newly adopted IMUTCD. The policies and practices of the governmental agencies involved will determine the reasonableness in time in making any changes or additions as required by regulations in the use of traffic control devices as set forth in the IMUTCD.

Not all of the traffic control devices that appear in later revisions to the National MUTCD will appear in the IMUTCD; however, local jurisdictions, at their own discretion, may utilize portions of the revised National MUTCD providing such use is in substantial conformance to the National MUTCD and does not conflict with Indiana State law.

Reasonable time periods for changing existing installations to conform to the IMUTCD should normally be updated at the end of normal service life or as published, by the Federal Highway Administration, for the "Phase-in Compliance Periods".

**Standard:**

01 **Traffic control devices shall be defined as all signs, signals, markings, and other devices used to regulate, warn, or guide traffic, placed on, over, or adjacent to a street, highway, pedestrian facility, bikeway, or private road open to public travel (see definition in Section 1A.13) by authority of a public agency or official having jurisdiction, or, in the case of a private road, by authority of the private owner or private official having jurisdiction.**

02 **The Manual on Uniform Traffic Control Devices (MUTCD) is incorporated by reference in 23 Code of Federal Regulations (CFR), Part 655, Subpart F and shall be recognized as the national standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel (see definition in Section 1A.13) in accordance with 23 U.S.C. 109(d) and 402(a). The policies and procedures of the Federal Highway Administration (FHWA) to obtain basic uniformity of traffic control devices shall be as described in 23 CFR 655, Subpart F.**

03 **In accordance with 23 CFR 655.603(a), for the purposes of applicability of the MUTCD:**

A. **Toll roads under the jurisdiction of public agencies or authorities or public-private partnerships shall be considered to be public highways;**

B. **Private roads open to public travel shall be as defined in Section 1A.13; and**

C. **Parking areas, including the driving aisles within those parking areas, that are either publicly or privately owned shall not be considered to be “open to public travel” for purposes of MUTCD applicability.**

04 **Any traffic control device design or application provision contained in this Manual shall be considered to be in the public domain. Traffic control devices contained in this Manual shall not be protected by a patent, trademark, or copyright, except for the Interstate Shield and any items owned by FHWA.**

**Support:**

05 Pictographs, as defined in Section 1A.13, are embedded in traffic control devices but the pictographs themselves are not considered traffic control devices for the purposes of Paragraph 4.

06 The need for uniform standards was recognized long ago. The American Association of State Highway Officials (AASHO), now known as the American Association of State Highway and Transportation Officials (AASHTO), published a manual for rural highways in 1927, and the National Conference on Street and Highway Safety (NCSHS) published a manual for urban streets in 1930. In the early years, the necessity for unification of the standards applicable to the different classes of road and street systems was obvious. To meet this need, a joint committee of AASHO and NCSHS developed and published the original edition of this Manual on Uniform Traffic Control Devices (MUTCD) in 1935. That committee, now called the National Committee on Uniform Traffic Control Devices (NCUTCD), though changed from time to time in name, organization, and personnel, has been in continuous existence and has contributed to periodic revisions of this Manual. The FHWA has administered the MUTCD since the 1971 edition. The FHWA and its predecessor organizations have participated in the development and publishing of the previous editions. There were nine previous editions of the MUTCD, and several of those editions were revised one or more times. Table I-1 traces the evolution of the MUTCD, including the two manuals developed by AASHO and NCSHS.

**Standard:**

07 **The U.S. Secretary of Transportation, under authority granted by the Highway Safety Act of 1966, decreed that traffic control devices on all streets and highways open to public travel in accordance with 23 U.S.C. 109(d) and 402(a) in each State shall be in substantial conformance with the Standards issued or endorsed by the FHWA.**

**Support:**

08 The “Uniform Vehicle Code (UVC)” is one of the publications referenced in the MUTCD. The UVC contains a model set of motor vehicle codes and traffic laws for use throughout the United States.

**Guidance:**

09 *The States should adopt Section 15 -116 of the UVC, which states that, No person shall install or maintain in any area of private property used by the public any sign, signal, marking, or other device intended to regulate, warn, or guide traffic unless it conforms with the State manual and specifications adopted under Section 15 -104.”*

**Table I-1. Evolution of the MUTCD**

Year	Name	Month / Year Revised
1927	Manual and Specifications for the Manufacture, Display, and Erection of U.S. Standard Road Markers and Signs (for rural roads)	4/29, 12/31
1930	Manual on Street Traffic Signs, Signals, and Markings (for urban streets)	No revisions
1935	Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)	2/39
1942	Manual on Uniform Traffic Control Devices for Streets and Highways — War Emergency Edition	No revisions
1948	Manual on Uniform Traffic Control Devices for Streets and Highways	9/54
1961	Manual on Uniform Traffic Control Devices for Streets and Highways	No revisions
1971	Manual on Uniform Traffic Control Devices for Streets and Highways	11/71, 4/72, 3/73, 10/73, 6/74, 6/75,
1978	Manual on Uniform Traffic Control Devices for Streets and Highways	12/79, 12/83, 9/84, 3/86
1988	Manual on Uniform Traffic Control Devices for Streets and Highways	1/90, 3/92, 9/93, 11/94, 12/96, 6/98,
2000	Manual on Uniform Traffic Control Devices for Streets and Highways — Millennium Edition	7/02
2003	Manual on Uniform Traffic Control Devices for Streets and Highways	11/04, 12/07
2009	Manual on Uniform Traffic Control Devices for Streets and Highways	

**Support:**

10 The Standard, Guidance, Option, and Support material described in this edition of the MUTCD provide the transportation professional with the information needed to make appropriate decisions regarding the use of traffic control devices on streets, highways, bikeways, and private roads open to public travel (see definition in Section 1A.13).

11 Throughout this Manual the headings Standard, Guidance, Option, and Support are used to classify the nature of the text that follows. Figures and tables, including the notes contained therein, supplement the text and might constitute a Standard, Guidance, Option, or Support. The user needs to refer to the appropriate text to classify the nature of the figure, table, or note contained therein.

**Standard:**

12 **When used in this Manual, the text headings of Standard, Guidance, Option, and Support shall be as defined in Paragraph 1 of Section 1A.13.**

**Support:**

13 Throughout this Manual all dimensions and distances are provided in English units. Appendix A2 contains tables for converting each of the English unit numerical values that are used in this Manual to the equivalent Metric (International System of Units) values.

**Standard:**

14 **All minimum and maximum values noted in a Standard shall be construed as referring to the English System of Units.**

**Guidance:**

15 *If Metric units are to be used in laying out distances or determining sizes of devices, such units should be specified on plan drawings and made known to those responsible for designing, installing, or maintaining traffic control devices.*

16 *Except when a specific numeral is required or recommended by the text of a Section of this Manual, numerals displayed on the images of devices in the figures that specify quantities such as times, distances, speed limits, and weights should be regarded as examples only. When installing any of these devices, the numerals should be appropriately altered to fit the specific situation.*

**Support:**

17 The following information will be useful when reference is being made to a specific portion of text in this Manual.

18 There are nine Parts in this Manual and each Part is comprised of one or more Chapters. Each Chapter is comprised of one or more Sections. Parts are given a numerical identification, such as Part 2 – Signs. Chapters are identified by the Part number and a letter, such as Chapter 2B – Regulatory Signs, Barricades, and Gates. Sections are identified by the Chapter number and letter followed by a decimal point and a number, such as Section 2B.03 – Size of Regulatory Signs.

19 Each Section is comprised of one or more paragraphs. The paragraphs are indented and are identified by a number. Paragraphs are counted from the beginning of each Section without regard to the intervening text headings (Standard, Guidance, Option, or Support). Some paragraphs have lettered or numbered items. As an example of how to cite this Manual, the phrase “Not less than 40 feet beyond the stop line” that appears in Section 4D.14 of this Manual would be referenced in writing as “Section 4D.14, P1, A.1,” and would be verbally referenced as “Item A.1 of Paragraph 1 of Section 4D.14.”

**Standard:**

20 **In accordance with 23 CFR 655.603(b) (3), States or other Federal agencies that have their own MUTCDs or Supplements shall revise these MUTCDs or Supplements to be in substantial conformance with changes to the National MUTCD within 2 years of the effective date of the Final Rule for the changes. Substantial conformance of such State or other Federal agency MUTCDs or Supplements shall be as defined in 23 CFR 655.603(b)(1).**

21 **After the effective date of a new edition of the MUTCD or a revision thereto, or after the adoption thereof by the State, whichever occurs later, new or reconstructed devices installed shall be in compliance with the new edition or revision.**

22 **In cases involving Federal-aid projects for new highway or bikeway construction or reconstruction, the traffic control devices installed (temporary or permanent) shall be in conformance with the most recent edition of the National MUTCD before that highway is opened or re-opened to the public for unrestricted travel [23 CFR 655.603(d)(2) and (d)(3)].**

23 **Unless a particular device is no longer serviceable, non-compliant devices on existing highways and bikeways shall be brought into compliance with the current edition of the National MUTCD as part of the systematic upgrading of substandard traffic control devices (and installation of new required traffic control devices) required pursuant to the Highway Safety Program, 23 U.S.C. §402(a). The FHWA has the authority to establish other target compliance dates for implementation of particular changes to the MUTCD [23 CFR 655.603(d)(1)]. These target compliance dates established by the FHWA shall be as shown in Table I-2.**

24 **Except as provided in Paragraph 24, when a non-compliant traffic control device is being replaced or refurbished because it is damaged, missing, or no longer serviceable for any reason, it shall be replaced with a compliant device.**

**Option:**

25 A damaged, missing, or otherwise non-serviceable device that is non-compliant may be replaced in kind if engineering judgment indicates that:

- A. One compliant device in the midst of a series of adjacent non-compliant devices would be confusing to road users; and/or
- B. The schedule for replacement of the whole series of non-compliant devices will result in achieving timely compliance with the MUTCD.

**Table I-2. Target Compliance Dates Established by the FHWA**

2009 MUTCD Section Number(s)	2009 MUTCD Section Title	Specific Provision	Compliance Date
2A.08	Maintaining Minimum Retroreflectivity	Implementation and continued use of an assessment or management method that is designed to maintain traffic sign retroreflectivity at or above the established minimum levels (see paragraph 2)	2 years from the effective date of this revision of the 2009 MUTCD*
2A.19	Lateral Offset	Crashworthiness of sign supports on roads with posted speed limit of 50 mph or higher	January 17, 2013 (date established in 2000 MUTCD)
2B.40	ONE WAY Signs (R6-1, R6-2)	New requirement in the 2009 MUTCD for the number and locations of ONE WAY signs	December 31, 2019
2C.06 thru 2C.14	Horizontal Alignment Warning Signs	Revised requirements in the 2009 MUTCD regarding the use of various horizontal alignment signs (see Table 2C-5)	December 31, 2019
2E.31, 2E.33, and 2E.36	Plaques for Left-Hand Exits	New requirement in the 2009 MUTCD to use E1-5aP and E1 -5bP plaques for left-hand exits	December 31, 2014
4D.26	Yellow Change and Red Clearance Intervals	New requirement in the 2009 MUTCD that durations of yellow change and red clearance intervals shall be determined using engineering practices (see paragraphs 3 and 6)	5 years from this revision of the 2009 MUTCD, or when timing adjustments are made to the individual intersection and/or corridor, whichever occurs first
4E.06	Pedestrian Intervals and Signal Phases	New requirement in the 2009 MUTCD that the pedestrian change interval shall not extend into the red clearance interval and shall be followed by a buffer interval of at least 3 seconds (see paragraph 4)	5 years from this revision of the 2009 MUTCD, or when timing adjustments are made to the individual intersection and/or corridor, whichever occurs first
6D.03 <sup>***</sup>	Worker Safety Considerations	New requirement in the 2009 MUTCD that all workers within the right-of-way shall wear high-visibility apparel (see Paragraphs 4, 6, and 7)	December 31, 2011
6E.02 <sup>**</sup>	High-Visibility Safety Apparel	New requirement in the 2009 MUTCD that all flaggers within the right-of-way shall wear high-visibility apparel	December 31, 2011
7D.04 <sup>**</sup>	Uniform of Adult Crossing Guards	New requirement in the 2009 MUTCD for high-visibility apparel for adult crossing guards	December 31, 2011
8B.03, 8B.04	Grade Crossing (Crossbuck) Sign and Supports	Retroreflective strip on Crossbuck sign and support (See Paragraph 7 in Section 8B.03 and Paragraphs 15 and 18 in Section 8B.04)	December 31, 2019
8B.04	Crossbuck Assemblies with YIELD or STOP Signs at Passive Grade Crossings	New requirement in the 2009 MUTCD for the use of STOP or YIELD signs with Crossbuck signs at passive grade crossings	December 31, 2019

\* Types of signs other than regulatory or warning are to be added to an agency's management or assessment method as resources allow.

\*\* MUTCD requirements is a result of a legislative mandate.

Note: All compliance dates that were previously published in Table I-2 of the 2011 Indiana MUTCD and that do not appear in this revised table have been eliminated.

**Table I-3. Revision Summary (Sheet 1 of 3)**

Revision #	Part	Section/ Figure/ Table	Page No.	Revision
1	Introduction	Table I-2	I-6	Target Compliance Dates Re-established by the FHWA revised Dates revised for sections 2A.08, 2A.19, 4D.26, 4E.06, and 8B.03 Dates Deleted for sections 2A.08, 2B.03, 2B.09, 2B.10, 2B.11, 2B.13, 2B.26, 2B.55, 2C.04, 2C.20, 2C.30, 2C.38, 2C.40 to 2C.42, 2C.46, 2C.49, 2C.50, 2C.61, 2C.63, 2D.43 to 2D.45, 2G.01 to 2G.07, 2G.11 to 2G.15, 2H.02 & .03, 2I.07, 2I.08, 2J.05, 2N.03, 3B.04 & 05, 3B.18, 4D.31, 4E.07, 5C.05, 7B.11, 7B.12, 7B.16, 8B.19 and 8C.02 to .05, 8C.09, 9B.18 Reference for Grade Crossing (Crossbuck) Sign and Supports changed from Section 8B.03 to 8B.03 and 8B.04
1	Introduction	Table I-3	I-7 thru I-9	Added table to document revisions
1	Part 1	Section 1A.14	23	"LRT-light rail transit" added as a new item 27
1	Part 1	Table 1A-1	24	In the Row for "US Numbered Route", the "US" in the second column changed to "See Table 1A-2"
1	Part 1	Table 1A-2	25	In the Row for "State, county, or other non-US or non-Interstate numbered Route" the double asterisk in the second column is replaced with a single asterisk. And a double asterisk is added after "Number" in the fourth column
1	Part 1	Table 1A-2	25	A new Row is added between the rows for "Upper" and "Vehicle(s)" that has "US Numbered Route" in the first column, "US*" in the second column, a dash in the third column, and "Number**" in the fourth column.
1	Part 2	Section 2A.18	42	Paragraph 12, the reference to "Section 2D.31" changed to "Section 2D.12"
1	Part 2	Table 2B-1 (Sheet 2 of 4)	47	The Asterisk associated with the message to Table 9B-1 for minimum sign size for bicycle facilities shown next to signs R4-1, R4-2, R4-3, R4-7, R4-7a, R4-7b, R4-16,, and R5-6
1	Part 2	Table 2B-1 (Sheet 2 of 4)	47	The size of the Van Assessable (R7-8P) plaque changed to 12"x6" from 18"x9" in both of the Conventional Road columns.
1	Part 2	Table 2B-1 (Sheet 3of 4)	48	In the Sign or Plaque column, the name of the R9-3 sign changed from "No Pedestrian Crossing (symbol)" changed to "No Pedestrians"
1	Part 2	Table 2B-1 (Sheet 3of 4)	48	STOP HERE FOR FLASHING RED (R10-14b) sign added
1	Part 2	Figure 2B-27	96	STOP HERE ON FLASHING RED (R10-14b) sign added
1	Part 2	Table 2C-2 (Sheet 1 of 3)	105	In the Sign or Plaque column, the name of the W3-1,2,3 signs changed from "Advanced Traffic Control" to "Stop, Yield, or Signal Ahead" to be more descriptive and to be consistent with Table 9B-1
1	Part 2	Table 2C-2 (Sheet 1 of 3)	105	In the Sign or Plaque column, the name of the W4-1 sign changed from "Merge" to "Merging Traffic" to be more descriptive and to be consistent with Table 6F-1.
1	Part 2	Section 2C.65	136	Paragraph 3, the word "appurtances" changed to "appurtenances"
1	Part 2	Table 2D-1	139	In the Conventional Road column, the asterisk deleted from the sizes for the 2-lines and 3-line D3-2 signs.
1	Part 2	Table 2D-1	139	Size of the 4-line D3-2 sign changed to "Varies x 54" from "Varies x 60**".
1	Part 2	Table 2E-1 (Sheet 2 of 2)	189	The minimum sizes of the following signs are changed: D1-1 and D1-1a changed to "Varies x 24" from "Varies x 30" D1-2 and D1-2a changed to "Varies x 42" from "Varies x 54" D1-3 and D1-3a changed to "Varies x 60" from "Varies x 72" D2-1 changed to "Varies x 24" from "Varies x 30" D2-2 changed to "Varies x 36" from "Varies x 54" D2-3 changed to "Varies x 48" from "Varies x 72" 2-line D3-2 sign changed to "Varies x 36" from "Varies x42**" 3-line D3-2 sign changed to "Varies x 48" from "Varies x66**" 4-line D3-2 sign changed to "Varies x 66" from "Varies x84**"

**Table I-3. Revision Summary (Sheet 2 of 3)**

Revision #	Part	Section/ Figure/ Table	Page No.	Revision
1	Part 2	Section 2F.10	244	Paragraph 1. the reference to "section 2E.30 and 2E.33" changed to "Section 2E.33 and 2E.36"
1	Part 2	Figure 2G-27	291	Note number 5 changed to 3
1	Part 2	Table 2I-1	302	The size of the D12-5 sign changed to "48 x 60" from "42 x 60" in the Conventional Road column, and "66 x 72" from "66 x 78" in the Freeway or Expressway column.
1	Part 2	Section 2I.02	304	Paragraph 19 at the end of the first line and beginning of the second the word "sign" changed to "plaque"
1	Part 2	Section 2I.02	304	Paragraph 19 the designation "D9-13a", "D9-13b", "D9-13c", and "D9-13d" changed to "D19-13aP", "D9-13bP", "D19-13cP", and "D19-13dP" respectively
1	Part 2	Figure 2I-8	312	In the note the reference to "Section 2I.08" changed to "Section 2I.10"
1	Part 2	Figure 2J-2	318	Replaced ½ Mile Advance Guide Sign with an Exit Direction Sign.
1	Part 2	Section 2J.06	320	Changed paragraph 01 so that limitations on specific service sign placement are based on Exit Direction sign location.
1	Part 2	Table 2M.1	335	The Radiator Water (RS-124) sign has been added to the "Services" portion of the table
1	Part 2	Figure 2M-7	342	Designation of the Radiator Water sign changed from RS-114 to RS-124
1	Part 3	Figure 3B-8 (Sheet 2 of 2)	363	The label for the "Theoretical gore" deleted
1	Part 3	Figure 3C-1	403	The "optional" label near the bottom of the figure that point to the edges lines along the approach roadway deleted
1	Part 3	Figure 3C-13	415	The note "Optional diagonal yellow crosshatch markings" added
1	Part 4	Table 4C-3	446	In first column "Major" street changed to "Minor" street, and in second column "Minor" street changed to "Major" street
1	Part 4	Table 4C-4	446	In first column "Major" street changed to "Minor" street, and in second column "Minor" street changed to "Major" street
1	Part 4	Table 4C-5	448	In first column "Major" street changed to "Minor" street, and in second column "Minor" street changed to "Major" street
1	Part 4	Table 4C-6	448	In first column "Major" street changed to "Minor" street, and in second column "Minor" street changed to "Major" street
1	Part 4	Section 4E.11	516	Paragraph 15, the reference to "section 4D.13" changed to "Section 4E.13"
1	Part 4	Figure 4F-3	521	In step 5 the phrase "Pedestrian Clearance Interval " changed to "Pedestrian Change Interval"
1	Part 4	Section 4F.03	521 & 522	Paragraphs 2 and 3 the phrase "pedestrian clearance interval" changed to "pedestrian change interval"
1	Part 6	Section 6E.06	581 & 583	Paragraphs 2 to 10 added back in as INFORMATION ONLY
1	Part 6	Table 6F-1 (Sheet 1 of 3)	588	Name of the sign R3-7 changed from "Mandatory Movement (text) to "Right (Left) lane Must Turn Right (Left)"
1	Part 6	Table 6F-1 (Sheet 1 of 3)	588	Name of the W1-8 sign changed from "Chevron" to "Chevron alignment"
1	Part 6	Table 6F-1 (Sheet 3 of 3)	590	G20-5aP "Work Zone" plaque deleted and XG20-5P "Worksite" plaque added

**Table I-3. Revision Summary (Sheet 3 of 3)**

Revision #	Part	Section/ Figure/ Table	Page No.	Revision
1	Part 6	Table 6F-1 (Sheet 3 of 3)	590	Name of the signs "XR2-6", "XR2-6a", and "XR2-6b" changed to "XW2-6", "XW2-6a", and "XW2-6b"
1	Part 6	Figure 6F-3 (Sheet 1 of 2)	594	G20-5aP "Work Zone" plaque deleted and XG20-5P "Worksite" plaque added
1	Part 6	Section 6F.12	596	Paragraph 1 changed plaque from "Work Zone" G20-5aP to "Worksite" XG20-5P. Paragraph 6 name of the signs "XR2-6", "XR2-6a", and "XR2-6b" changed to "XW2-6", "XW2-6a", and "XW2-6b"
1	Part 6	Figure 6F-4 (Sheet 3 of 3)	600	Image of W20-5 sign corrected
1	Part 7	Table 7B-1	755	Size for "Watch for School Bus" sign (S3-Y3) changed for Conventional Road from 30"x30" to 36" x 36", and for minimum from 36" x 36' to 30" x 30"
1	Part 9	Table 9B-1 (Sheet 1 of 2)	817	In the sign or Plaque column, the name of of the W1-1,2,3,4,5 changed from "Turn and Curve Warning" to "Horizontal Alignment"
1	Part 9	Table 9B-1 (Sheet 2 of 2)	818	In the sign or Plaque column, the numbers of the digits for the D10-1a, D10-2a, and D10-3a signs changed to 2, 3, and 4 respectively
1	Appendix	Table A2-4	A2-1	The "010" in the mph column changed to "10". The conversion for 65 mph to 110 km/h deleted and a conversion for 70 mph to 115 km/h added.
2	Part 2	Table 2B-1	49	Deleted Left on Arrow Only Sign (R10-Y5a) from Table.
2	Part 2	Section 2B.53	95	Deleted Left on Arrow Only Sign (R10-Y5a). It is incompatible with the red arrow signal indication.
2	Part 4	Section 4D.32	503	The prohibition against the use of portable traffic signals is eliminated. Standards regarding proper use of portable traffic signals added.
2	Part 6	Section 6F.84	625	The requirement that temporary traffic signals not be mounted on trailers is eliminated; portable signals not allowed for mobile and short duration work.

This page is intentionally blank